

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. LX.*

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SECTION III.

Herr Turley, of Lipine, in Upper Silisia, devised a coal cutter, or rather holing machine, for use in the Mansfeld copper slate mines. The machine consists essentially of a large toothed wheel, or circular saw, which is intended to undercut in the seam, after the manner of a circular saw. The teeth on this wheel are formed simply for the purpose of cutting the slate. On the same axle as this wheel is fixed a small turbine, or tangential water wheel, by which the axle, and with it the cutting wheel, is rotated. The carriage of the machine is designed to run on four wheels, on rails provided with iron sleepers.

On the same principle of using a wheel provided with cutters is that of Messrs. Winstanley and Barker. The cutting wheel is provided with 20 large epicycloidal teeth, and in a recess formed in each of these teeth a short broad cutter is inserted, and held fast by a bolt, likewise recessed in the side of the tooth. The cutting wheel is driven by a pinion or star wheel. The spaces between the teeth of the pinion are so deep as to allow room for the cutters attached to the teeth of the cutting wheel. The cutting wheel is held by a large casting, which is pivoted, or centred, about the same axle as the small pinion; the breadth of the cutters (i.e., height of the under cut) is about 3 in. The rim of the wheel and the teeth are made thicker than the arms and centre; the casting which carries the cutting wheel, and which arched at the end next the frame (so as to allow of the wider rim and cutters of the wheel passing), is itself depressed, so as to go underneath the coal in the holing, and thus allows of the undercutting being made close up to the frame, and the necessary depth of undercut is thus obtained. The casting carrying the cutting wheel can be rotated so as to bring the wheel beneath the frame, and thus out of the way when it is required to move the machine from one part of the workings to the other. For this purpose the back part of the casting is formed in the shape of a quadrant, provided with teeth, into which a small worm wheel, or endless screw works, the latter being rotated by hand. The pinion driving the cutting wheel is fastened on a shaft provided at its upper end with a single crank. Two cylinders of 9 in. diameter and 6 in. stroke, placed at right angles to each other, act upon this crank. In some of the machines the cylinders are made 8 in. diameter, and with 12 in. stroke. The machine itself is only 22 in. in height, and the depth of the undercut obtained amounts to about 3 ft. The rate of holing in hard coal appears to vary between 14 and 25 yards per hour, which gives an advance of between 110 and 200 yards per shift of 8 hours; as, however, an average of at least 3 hours per shift of 8 hours is employed in bye work, such as lengthening pipes, &c., an effective advance of between 70 and 120 yards per shift of 8 hours is obtained. The machine is made in two sizes, of 15 and 20 cwt. each.

Similar machines for undercutting, with wheel cutters and the like, have been projected and patented by Walker, Johnstone, Donisthorpe, Farrar, Booth, Sturgeon, and others, but without obtaining to an extensive or regular use, many not having passed the stage of experiment.

In the coal cutting machines of Firth and Donisthorpe and of Carrett the great disadvantage of the time lost during the return stroke appears to have been looked upon as the great disadvantage. In the latter machines, with circular cutters, great difficulty was found in designing a compact machine, which should be capable of undercutting to a greater depth than 3 ft., the cutting wheel then becoming inconveniently large. To avoid these disadvantages was the object of a machine designed by F. Hurd, of Rochdale. This he accomplished by making the steel cutters to form part of an endless chain, which by means of guides and pulleys travelled in an elliptical curve. With this arrangement the casting for carrying the cutter chain would be made at the same time lighter, and comparatively stronger, and the height of the undercut can easily be reduced to about 1½ to 2 in.

During the same time or even previous to the attempt to replace hand labour in undercutting by machines, the attention of inventors has been directed to replacing of the use of powder in blowing down the coal by machines. The great loss of life attending explosions in fiery pits has led in this country to the complete abandonment of powder in mines liable to sudden outbursts of gas, or where gas is given off in considerable quantities during the ordinary working. In such pits, therefore, the coal must be brought down by wedging. In some seams this wedging down by hand presents no great difficulty, nor is the expense of getting the coal thereby very greatly increased. In other mines, however, the higher price which must be paid for getting the coal without powder appeared to offer an opening for the introduction of some mechanical means for wedging down the coal. Besides the removal of the danger of explosion, the getting of coal by wedging instead of blasting has the great advantage that the coal is got in larger lumps, and besides is not so much shaken and shattered as when powder has been used, from which cause alone many of the large lumps obtained by blasting fall to small pieces in going through the screens, or on their way to their destination. The coal can also be thus much better dressed, and the accidents which occur from the use of powder, irrespective of the danger to cause explosions in fiery mines, are avoided.

One of the first attempts to replace the use of powder was made by Mr. now Sir George, Elliot, of Newcastle. His first efforts were directed to make use of the swelling that various substances undergo during their absorption of moisture. The chief experiments were made with burnt lime, which was rammed tight into the hole in the place of powder and tamping. The effect obtained was not only too weak but also too slow. His next experiments were directed to the forcing down of the coal by pressing water into the bore hole by means of narrow pipes; the end of the last one, which was of a diameter to fit the sides of the hole closely, was inserted partly into the hole. The water, however, under such a great pressure made its escape through the pores and clefts in the coal. Cochran attempted to wedge down the coal by using wedges, two of which were placed in the hole (which is, therefore, bored of a large diameter), with their narrow ends directed outwards, and between these a third wedge, with the narrow end directed inwards, was inserted. The centre wedge was pressed forward by means of a screw, which might pass through the bent end of a curved strap attached to the side wedges, or with a long hollow screwed socket the bearing for the screw might be taken from a tightly fastened prop. The experiments failed an account of the wedges not being forced far enough apart, a lift of 1½ in. at most being attained; it has been found in practice with other machines that a lift of 4 in. at least should be obtained in most cases to have any certainty of forcing down the coal.

Grafton Jones introduced along with his coal cutting machines an hydraulic arrangement, which consisted of a long thick tube closed at both ends, except where the narrow pipe from the hydraulic pump is inserted. A number of holes are drilled through the tube at right angles to its axis. In each of these holes a closely fitting cylinder or piston is inserted, so that there are always two of these pistons diametrically opposite. As the water is forced into the tube from the hydraulic pump the pistons are driven outwards, and as each piston has a length—or rather stroke—of 1½ in., the width of the hole was increased by 3 in. This, however, was found insufficient to force down the fall of coal.

In 1869 a machine was designed by Charles J. Chubb for wedging down the coal after it had been undercut; the inventor being also of the opinion that by inclining the hole (in which the hydraulic press is inserted) either upwards or downwards the coal might be

obtained entirely by wedging, without undercutting. As the bore hole was required correspondingly large for the insertion of the press it was necessary to use some other arrangement than the ordinary hand borer. For this purpose Chubb used a long spiral blade, the end of which had five cutters attached to it. The centre cutter was shaped somewhat after the manner of a corkscrew; the two outside ones, as well as the other two (which latter are somewhat smaller), were ordinary shaped cutters. The other end of this spiral blade is attached by means of a cotter to the end of a long square threaded screw, which has a hand wheel attached to the loose end, by means of which the cutting—or rather boring—tool can be rotated. A square nut, provided with side pins or axles, slips over this screw. The pins fit in a rack arrangement on a cast-iron strut or pillar which can be firmly tightened between the roof and floor by means of a screw. The pitch of the screw attached to the cutter is such that by simply rotating the screw the hole is bored and the cutter advanced at the same time to the proper amount. The first press designed by Chubb consisted of a long hollow cylinder, the piston forming a long block of steel, having semi-circular ends; as, however, the lift or stroke did not amount to more than 1½ in., and the shape of the piston appeared defective, Chubb altered the arrangement in this respect, and made it similar to that of Grafton Jones—i.e., of several cylinders; in Chubb's machine, however, there were pistons on one side only of the hollow cylinder. The cylinder, however, is not one properly so called, having a segment cut off on both sides, and one at the top, in which the holes are drilled for the insertion of the pistons. A shaped lid covers the top of the press and pistons, and laps over on both sides, so as to prevent dirt and coal dust getting into the machine. The lifts of the piston vary between 2½ inches and 3 inches, and their diameter 4½ and 5½ in. The bottom side of each piston has a leather disc attached by a bolt passing through the centre, and being cup-shaped and somewhat larger than the piston in diameter, the water is prevented from leaking out round the pistons. A short hole is drilled and tapped on the upper side of each piston, so that by screwing a bolt into them they can be readily lifted out of their place. In order to prevent the pistons being driven completely out a small hole in the side of the cylinder allows the water to escape after a maximum stroke. The water is led to the cylinder by a strong steel tube, the other end of which is attached to a small force pump, such as are used for hydraulic jacks. A small cock is provided to let off the water when it is required to withdraw the machine from the hole. The larger machine is constructed for a pressure of 3 tons per square inch on the pistons, which have each an area of 23½ square inches, which gives an effective pressure of 70 tons on each, or with all the eight pistons of 560 tons. The machine has been tried at Mountain Ash, in Wales, and at Merthyr. At the latter place the coal was got without any undercutting, and a saving of 25 per cent. on the coal getter's wage is said to have been effected. The boring of the hole and the fixing of the press occupied about 30 minutes.

THE COPPER MINES OF LAKE SUPERIOR.

Mr. WILLIAM MORGANS, F.G.S., mining engineer, of Bristol and Frome, delivered a lecture at the Bristol Mining School on the "Copper Mines of Lake Superior." The Rev. T. C. Price, M.A., one of the governors, presided. The rocks of the Upper Peninsula, and their economic products, were fully illustrated by maps, and also by specimens which were collected by the lecturer during his inspection of the iron and copper mines of that district, in connexion with his recent work at the exhibition at Philadelphia. Very complete sections of the "Mineral Ranges" of the Keweenaw Peninsula were exhibited, and the mineral character of the Melaphees, Amygdaloids, and Conglomerate Belts of the copper-bearing rocks were explained. After describing the lithological features of the productive true veins and stratified belts, the lecturer spoke of mines in which both classes of deposits were worked, and then reference was made to some curious compound faulting occurring at the Copper Falls Mine. The mode of occurrence of mass and stamp copper and silver was then dealt with, and afterwards followed an instructive and very practical description of the mode of working the deposits, with detailed accounts of the underground and surface arrangements of the mines. The latter were criticised by the lecturer, and the good and bad points of the machinery for pumping, winding, transport, and stamping laid open. Very useful statistics for students and mining engineers were given as regards the cost of stamping and dressing the ores, and the capabilities of various machines, particularly of Ball's steam stamps, of which the Pewabic Company employ three heads—each equal to stamping 120 tons of ore per diem—and the Calumet and Hecla Company seven heads, which dispose of an aggregate of 800 tons per 24 hours. The process of smelting the native ores is very simple, and was briefly described. Next followed an interesting account of the past and present relations subsisting between capital and labour in the district, and of the improvement which set in after the conclusion of the Civil War. Some of the old funds were recounted. The present conduct and habits of the workmen were highly praised, and after speaking of the marked benefits to both employers and workmen arising from curtailing the sale of intoxicating drinks, the lecturer recommended to the attention of mine managers and others interested in the welfare of our industries and commerce a consideration of the damaging effect of the drinking practices of our country upon the profits of capitalists and the wages of workmen, as well as upon the security of life and property. The subject of exploration of new territory was noticed, and details given of the rations, supplies, and equipments requisite for parties prospecting the forests and swamps, and for fording and rafting the rivers and lakes which form the chief topographical features of those ore-producing regions. After alluding to the qualifications of explorers and the causes of success and failure, the lecturer concluded by wishing continued success to the Americans, who deserved all they had gained from those very paying ore accumulations, and expressed a hope that the people of Canada would in the future share some of the riches of the copper-bearing rocks by finding the corresponding belts to the north of the Lake. In expressing the thanks of the meeting to Mr. Morgans, his former successful connexion with the Bristol Mining School and his contributions to mining literature were spoken of in high terms of praise.

THE ELECTRIC LIGHT.—In a paper on "Some Recent Improvements in Dynamo-Electric Apparatus," read at the Institute of Civil Engineers, by Dr. HIGGS and Mr. BRITTLER, the practical application of Faraday's discovery of the principle of magneto-electricity was stated to be the origin of the present powerful dynamo-electric machines. A description was then given of the latest construction of the Siemens' dynamo-electric machine and the electric lamp, the latter devised specially for lighthouse illumination, similar lamps being about to be supplied for the Lizard lighthouse. The magneto-electric machines first employed in lighthouse illumination, as pointed out by Dr. Tyndall, bore a cost of 10 to 1 as compared with the latest dynamo machine, while the cubic spaces occupied were as 25 to 1, and the weights as 137 to 1; the total light power produced for the condensed beam of light being as about 1 to 5. Thus, with a cost of 10 times, with a weight 14 times, and a volume 25 times that of the latest construction, the old machines produced one-fifth of the light with an expenditure of practically the same driving power. Much excitement had been evinced as to the probable competition between gas and electricity as sources of light power. Although under certain circumstances these two agents undoubtedly came into competition, they had separate fields. Hitherto gas had been employed for lighting spaces of both large and small dimensions, because a better source of light for large spaces had not been procurable with economy; but for lighting large spaces not subdivided by opaque objects or screens it was a want of economy to employ gas. Assuming the light power proportional to horsepower expended, 100 horse power would give 150,000 candles' light; distributed from three points the cost would not be more than 1½ 2s 6d. per hour, each light centre giving an illumination which would enable small print to be read at a distance of a quarter of a mile. For large spaces the cost of electric lighting was about one-fourth, or even one-fifth that of gas lighting, when steam had been

used as power and wear and tear were reckoned. With a gas engine as motor the ratio had only been as 1 to 3, the greatest economy having been with a turbine as motor. If, however, the ratio of light intensities were adopted as to the ratio of efficiency, the advantage would be considerably higher (20 to 1) in favour of electric lighting. It might be laid down as proved by experience that for lighting large spaces not too much subdivided the advantage was greatly in favour of the electric light, but that where numerous light centres of small intensity were required, or where the space was too much subdivided, the advantage was in favour of gas. This advantage would cease when a practical method of subdividing the electric light was obtained.

GEOLOGY OF THE ISLE OF MAN.—At the Leeds Geological Society on Monday, Mr. J. Kenworthy Blakey, F.G.S., read a paper on the geological features of the Isle of Man. Mr. H. A. Allbutt, M.D., F.R.C.P., presided. Mr. Blakey, in opening, said that the rocks of the island were of Paleozoic age, chiefly of the Silurian period, with some Devonian and carboniferous deposits. They had been subjected to many disturbing forces, the result being that they were much contorted, and often dipped away at an angle of 60°. He then referred to the valuable veins of lead, copper, and zinc found at Laxey, Foxdale, and elsewhere, which are worked by a royalty from the Crown. A considerable quantity of silver is extracted from the lead ore, amounting on an average to 40 ozs. per ton of ore. Several attempts had been made to find coal, but so far without success, and the result was that all the ore had to be sent either to Whitehaven or Swansea to be smelted. Granite appeared at several places, notably between Laxey and Ramsey, and on the eastern flank of South Barrule. Veins of quartz were frequently found cutting through the stratified rocks. Reference was also made to the slates and building stone produced on the island, which are only of moderate quality. Referring to the organic remains found in the various strata, Mr. Blakey said a large number of species had been obtained from the mountain limestone, and that remains of the Irish elk and other deer had been found in the alluvium with which the island is covered north of Snaefell.

THE LABOUR QUESTION.

Although incomparably the most important that can be discussed, the Labour Question is precisely that upon which by far the largest majority of the community are profoundly ignorant; not, indeed, because it is difficult of comprehension, but because the investigation of it is so completely neglected, and because there are so many agitators whose livelihood is derived from the propagation of false views amongst those who are too idle to think for themselves. But it must not be supposed, because many seek to profit by the diffusion of false views, that there are none who exert themselves to lay the truth before those most interested, nor must it be assumed that the principles acknowledged to be practically and scientifically correct would be less advantageous to the working man than anything which could even be expected from the development of the theories of the professional agitators. This has been very clearly shown by such lectures as those which during the past seven years have been delivered at various places by Mr. THOMAS BRASSEY, M.P.—a handsome volume*, which has just been issued by Messrs. Longman. The author distinctly states that in these addresses he publishes nothing new, but trusts that the exposition of sound doctrines on work and wages to the rank and file of the armies of industry may induce more competent teachers to work in the same field. The soil is fruitful, he remarks, but it demands the labour of the husbandman. That more could be said or written on the subject than is found in the book is no doubt true, but it is equally certain that the principles are so correctly enunciated that the statements may be thoroughly relied upon.

In an address delivered in the Workmen's Hall, Birkenhead, in 1871, Mr. Brassey remarked that at that time social problems were subjects of paramount interest; and that they are to be solved rather by the independent action of the people than by legislative enactment. He reminds his hearers of the universally accepted axiom of economic science that the rate of wages is invariably regulated by the relative proportions of the capital available for the payment of wages, and the number of workmen seeking employment. The only limit to the fall of wages is the cost of living; the workman's wages must be at least sufficient for his maintenance. Thus the rate of wages being essentially dependent on the relation between supply and demand, it is not possible for a trade combination in the long run to exercise a controlling influence on the price of labour, though concerted action might often obtain an advance of wages at an earlier date. He explains that in Wurtemberg the wages in eight branches of manufacture and industry had increased during the past 30 years without the aid of Trade Unions to the extent of 60 or 70 per cent. He might have added that in 1871 less necessities and luxuries could be purchased for 1½ thaler than were purchasable in 1841 for 1 thaler. He shows, too, that whilst Trade Unionism existed among the artisans in the New England States, and none among the agricultural labourers, the agricultural wages rose in the same proportion, and at the same time agriculture contributed 658,000,000. out of the 1,365,000,000. representing the annual value of the production of the whole of the leading industries combined. Mr. Brassey wisely recommended that the trades of England should appoint representatives to examine the position of the workmen in the corresponding trades abroad, and explained that our workmen are not sufficiently alive to the necessity which exists for the utmost effort and industry to enable capital invested in England to hold its own in the industrial campaign. Subsequent results have certainly shown the accuracy of Mr. Brassey's observations.

The reduction in the hours of labour is not objected to by Mr. Brassey, but he recognises the indisputable fact that unless each workman produces the same quantity of work evil results will follow. He remarks that a reduction in the hours of labour does not necessarily involve a corresponding reduction in the amount of work performed. A little more diligence will easily enable a workman to get through as much in nine hours as in ten, and he mentions the fact that a few years previously Mr. Dolfuss, the great manufacturer of Mulhausen, offered to reduce the working hours by an hour per day if the workpeople would produce the same amount of work in the shorter day; in a month the workpeople had succeeded in doing so. Mr. Brassey might have carried this argument still further, and stated that even when men are paid piecework it is essential to the master's interest that the daily output of work should be as large as possible. The price being the same, the larger the wages paid to the workmen the larger will be the master's profit, or the greater will be the master's ability to compete in the markets open to him. This is, however, the view which is really taken by Mr. Brassey when he remarks that an industry in which machinery is the principal instrument of production no exertions on the part of the operative will compensate for the loss sustained by the restriction of the hours of labour. He anticipates that the solution will be found in the employment of additional labour—that is, each machine being attended by two or three artisans relieving each other, as one watch relieves another on board ship. This would certainly be alike advantageous to the master and to the workman, and would reverse the state of affairs to which Mr. Brassey alludes when he states that in his small personal experience he has seen much to confirm the opinion expressed by Adam Smith that "workmen when they are liberally paid by the piece are very apt to overwork themselves and ruin their constitution in a few years."

It is evident that Mr. Brassey, like his father, rather favours high wages. He remarks that the reduction of wages is the form of economy to which employers only have recourse in the last resort. The dearth of labour in England has, he says, stimulated inventive genius and administrative skill, and the continued success of our trade should be attributed not only to the energy of the British workman, but to those improvements in the processes of manufacture. He reminds the workmen that the comparative cheapness of provisions abroad (admitting of low wages) goes far to compensate foreign competitors for the higher price of coal and iron.

"Lectures on the Labour Question." By THOMAS BRASSEY, M.P. London: Longmans, Green, and Co.

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* Being Notes on a Course of Lectures on Mining, delivered by Herr Berggrath, Dr. von Gumboldt, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

Referring to "Wages in 1873," before the Social Science Association at Norwich, Mr. Brassey pointed out that the great advance of wages was obviously due to the rapid growth of the general trade of the country. The demands upon the labour market far exceeded the supply, and the artisan and labourer were not slow to take advantage of a situation which afforded to them a brilliant opportunity. But the advance was carried too far. Crawshaw, and doubtless many others, could only carry out their contracts at a loss, and his men, instigated by the Union, ceased work, and it became a matter of honour with the masters to prove to their workmen that they were able when acting in concert to fight a successful campaign against the united forces of the Miners' Union. The miners were struggling in the dark, not having any independent information as to the profits realised by their employers.

Although the workmen connected with the Union were only 10,000 in number, by their cessation of labour 50,000 of their fellow-workmen engaged in various branches of the iron trade were kept out of work. The Colliers' Union distributed 40,000*l.* in strike pay during the time 800,000*l.* would have been received in wages. The men speedily had to succumb, and no doubt much of their misery is attributable, as Mr. Brassey points out, to their being turned aside against their own judgments by the eloquent exaggeration of orators who were interested in the continuation of the struggle. Overwhelming indeed is the influence of speech over the uneducated mind. Well may Carlyle exclaim—"He who well considers will find this same right of speech, as we moderns have it, to be a truly astonishing product of ages; and the longer he considers it the more astonishing and alarming. I reckon it the saddest of all the curses that now lie heavy on us." The British workman appears superior to the workman of any other country, but he is less sober.

Co-operative production was the subject of one of Mr. Brassey's addresses to the Annual Conference of the Co-operative Societies, and in it he remarks that it cannot be doubted that the co-operative system tends to diminish the business of that large class who earn their livelihood in the retail trade of the country. The co-operative system appears to be destined to be short lived, for Mr. Brassey states that in 1872 (the co-operative concerns were then much more popular than they are now, that more experience has been had of them) half as many withdrew as those who joined. The best principle to follow is to recommend your acquaintances to support co-operation because it keeps up prices, but carefully avoid the stores yourselves, and do business only with individual tradesmen, who will let nothing leave their shops except for ready money. Had the promoters of co-operative stores had to compete with ready-money tradesmen only their establishment would never have been possible. Mr. Brassey suggests co-operative production, but few who have impartially considered the subject will doubt that the system must be disadvantageous to the working man. The several trials made of the system have proved lamentable failures, and the only apparent success is the case in which the employers converted their own business into a co-operative partnership, and retained almost the sole control of the management, and by far the larger portion of the profits. The truth is that a successful employer of labour cannot be created by the voting power of the working men, since the majority of these, for the reason expressed by Mr. Brassey and already noticed, would elect the most fluent talkers, who are usually the least competent workers, and those least inclined to consider the interests of their fellow-workmen.

Amongst the lectures in the volume are to be noticed those on public elementary education in the United States and on the duties of the Church in relation to the labour question, on the South Wales colliery strike, on the influence affecting the price of labour at the present time, on Canada and the United States, on work and wages in 1877, and on labour at home and abroad, but the general character of the papers will be judged from the references already made. It is seldom that so vast an amount of valuable information is brought together in a single volume, and it is of a character of such paramount importance, to the working classes especially, that it may be hoped a cheap edition will be issued which will be more readily within the reach of all.

THE LAW OF MINES AND MINERALS.

For considerably more than a quarter of a century "Bainbridge's Treatise on the Law of Mines and Minerals" has been recognised as a standard work upon the subject of which it treats, and there is certainly no other volume which contains so large an amount of information. The third edition, published eleven years since, has naturally become somewhat antiquated as regards certain portions, so that the issue of a new edition will give general satisfaction. It has been very truly said that before the first publication of this work the subject of mines had received so little attention that there hardly existed any epitome of the law respecting it in the general and elaborate books of legal reference, yet there is no country which more demanded this research. English mining law is particularly complicated, for not only are the rights of every individual landowner respected, but not unimportantly the rights of the proprietor, who is, nevertheless, powerless to touch them without the sanction of another proprietor who owns the surface. This right of proprietorship, as Bainbridge remarks, subject to all the abstruse and complicated laws of devolution and enjoyment incident to real property, and the great division of lands among numerous owners have produced many corresponding impediments to the prosecution of mining, and have brought the miner into constant collision with the recognised rights of others.

The development of mining industry during the past ten years has been enormous, and the changes in the laws relating to mines have probably been greater than in any other branch. In connection with coal mining the very principles of English law have been ignored and even reversed, and scarcely less sweeping changes have been made in other directions. All these circumstances have evidently been carefully considered and dealt with by Mr. Brown, whose work, except as regards arrangement, may really be regarded as a new one, so greatly has it been extended and so vastly has it been improved. The principles of mining law, he explains, are now more definitely settled, and its details are much more accurately ascertained or ascertainable than they or either of them were at the time the author wrote. In the present edition Mr. Brown, while founding upon the old edition, has so arranged the matter that any particular point can readily be referred to. Amongst the improvements introduced are several of a special mention. A fuller table of contents has been compiled upon an entirely different plan. Mr. Brown's object, which he has well attained, being to present synoptically the various subject matters of mining law in their due relations to each other, as well logical as practical. The text itself has, of course, been transposed to correspond with the re-arranged table of contents. A running series of marginal references has been placed opposite each paragraph or connected series of paragraphs, expressing briefly, though intelligibly, the material portion of the contents; similar instances of more systematic arrangement occur throughout the volume, and the general index has been carefully remodelled. Much of the subject-matter of the treatise has been entirely re-written, and almost innumerable additions have been made, which render the volume an exact representative of the legal views entertained at the present time.

In the introductory chapter the definition given by Bainbridge was sufficiently absurd, that given in the new edition is simply idiotic. Bainbridge considered a mineral to be "a fossil, or what is dug out of the earth."—Brown adds to this, "and which is a predominantly metalliferous character." Both consider that in the most enlarged sense the term comprises "all the substances which are now destitute of and incapable of supporting animal or vegetable life." One would scarcely gain honours in the Natural Science Tripos for such knowledge as this, and if such be a fair specimen of the loose manner in which lawyers are usually instructed they certainly ought to be subject to the Elementary Education Act for a few years before attempting to guide others. It must be admitted, however, that to give such a definition to the word mineral as should be universally applicable would be extremely difficult, the fact being that much depends upon the question whether or not the material is for the time being of commercial value as a mineral. For example, a piece of cryolite saleable for the manufacture of alumina would legally be termed a mineral, although to refer to the mineral wealth of a farm because the soil happened to be clayey would obviously be absurd; so that, upon the whole, the opinion of Lord Tenterden that nothing turns upon the nature of the mineral or material that is raised or gotten apart from other considerations is probably that which will ensure the largest amount of justice. The chapter on freehold lands is divided into two sections, treating respectively of cases in which the surface and minerals belong to one common owner, and those in which they belong to distinct owners. In the next chapter copyhold lands are similarly dealt with in sections treating of manors and reputed manors generally; minerals within and under copyhold and customary freehold lands; and minerals within or under waste lands or commons, enclosed lands, and enfranchised lands. The succeeding chapter deals with minerals under church, charity, and municipal lands, and reference is then made to those under canals, railways, waterworks, and highways.

The chapter on Seigniorial and Quasi-Seigniorial mining rights, especially the first section which gives a historical statement of imperial mining rights. In the preceding chapters he remarks the phrase "ownership of lands, or of mines, or of both" has been very frequently used, but the ownerships he spoken of were found to be, strictly speaking, estates only—of greater or less duration. And the fact is, Mr. Brown continues, that the ownership proper—that is, the absolute ownership of all lands, and therefore also of all mines and minerals in England—is vested in no private subject, nor yet in any corporate body, but solely and exclusively in the Crown as the universal feudal seigneur or superior. The law of

England is not peculiar in this respect: a like law prevailed in ancient Rome, and also in the legislation of republican and imperial Rome, and the like law still prevails very largely to the present day in those foreign countries which have derived their law with more or less proximity from the Roman law. With regard to the mining rights of the English Crown, he remarks that it may be, in the first place, generally premised that the English law agrees with the Roman in respect of the so-called royal mines being mines of gold and silver only, which are exclusively the property of the Crown, as well legally as beneficially, in the same manner and to the same extent, at least in England, as were the like mines in Roman law—that is to say, free from any right or rights of the subject therein. But as to mines of the baser metals (which must at one time have been the property of the Crown *in posse* if not *in esse*) they have been conceded, with certain exceptions, to the subject, to be held by him in full legal and beneficial ownership, in the same manner and to the same extent that the surface of the lands has been conceded to him.

It has been reasonably supposed that the Crown's title in the excepted district is the modern remnant of ancient imperial mining rights, which were once much more extensive; and that, in fact, a proprietary title in all mines, as in all lands, was vested in the crown of William the Conqueror, he having by his right of conquest acquired the same in ownership, and not in suzerainty merely. It is even alleged that this more extensive right of the Crown is formally recognised in King John's charter of disafforestation (1215), and more especially in King Edward the First's grants to the tinners of Devon and of Cornwall (1306). But in those early times the mines of tin and lead, and of gold and silver, were, if not the only, at least the principal, mines to which industry was directed, and by the time that industry began to extend itself to mines of iron and coal, and such like baser substances, the spirit of liberty and private encroachment occasioned the assertion by individual landowners of rights that previously belonged to the Crown, so that in 1561 the "great case of mines" was decided, the judges distinguishing (apparently for the first time) in an authoritative and definite manner between the mining rights of the Crown and those of the subject, holding in effect that only the so-called royal mines belonged to the Crown, and that all baser minerals belong to the subject. Thus the English law then became divergent from the Roman law, and also from all those foreign mining laws which have followed more implicitly in the footsteps of the Roman law. In this chapter the history of the mining customs of Derbyshire, Cornwall, and elsewhere are given in a very interesting style, but these may be reserved for a future notice.

The volume, as indicated by its title, is essentially a legal work, and a very complete one too; but from the nature of the subject, and the readiness of miners generally to comply with both law and custom in carrying on their operations, it is probable that it will frequently be referred to by non-professional men with a view to the settlement of disputes which may arise, the clearness of the statements made rendering it especially suitable for that purpose. Mr. Brown has evidently bestowed a vast amount of labour and research upon the remodelling of the book, but for all his pains he has obtained ample compensation in the result, the work being now as complete and accurate as could be desired, and in every respect calculated to become a standard work on the subject.

FOREIGN MINING AND METALLURGY.

The further one advances into the new year the stronger appears to be the impression that the winter season of 1877-8 will resemble that of 1876-7. Thus, the middle of January has come and gone, and all that the month has yet brought with it has been some frosts of no great importance. Under these circumstances the demand for domestic qualities of coal has been comparatively languid. On the other hand, the demand for industrial qualities of coal has somewhat improved; the fall in the price of coal of this description is considered to have attained its full development, and as the rolling mills have become more active purchases have been made with less hesitation. An official return shows that the exports of Belgian coke into the Luxembourg in 1876 amounted to 339,039 tons, as compared with 394,966 tons in 1875. Belgian coal was exported to the Luxembourg to the extent of 46,625 tons in 1876, as compared with 29,140 tons in 1875. The Luxembourg is thus shown to be rather an important market for Belgian coke.

The French coal trade remains in a feeble condition, scarcely any upward tendency being observable. In the Nord, as well as in the basin of the Loire, transactions are almost nil, and no fall in prices is likely to render them more active, sellers having apparently made the utmost concessions to which they are likely to consent. Industrial qualities of coal do not appear to be in much more demand in France than domestic qualities, while French coalowners have also to deal as best they can with English, Belgian, and German competition. Stocks of coal are not considered to be increasing in France, but this is largely attributable to a reduction in the extraction. Upon the whole, the situation is far from being brilliant, complaints are made, and not without reason.

The French iron trade is dull, upon the whole. Few orders have been received of late in the Haute Marne. Charcoal-made pig for refining, ordinary quality, is worth 4*l.* 4*s.* to 4*l.* 5*s.* 8*d.* per ton; and ditto, superior quality, 4*l.* 12*s.* to 4*l.* 13*s.* 8*d.* per ton. Rolled coke-made iron has brought 6*l.* 13*s.* 8*d.* to 6*l.* 16*s.* per ton; and special iron, first-class, 7*l.* 4*s.* to 7*l.* 8*s.* per ton. At Paris there has been little business passing; some purchasers have profited from the present cheapness of iron to lay in supplies, without having any immediate occasion for them; rolled iron brought 6*l.* 12*s.* per ton, delivered in warehouse. In the Meurthe-et-Moselle refining pig is worth 2*l.* 10*s.* to 2*l.* 11*s.* per ton. In the Ardennes some new orders have been received; but, upon the whole, working operations in connection with the production of iron in this district present little activity; the foundries alone are tolerably well employed. In the Nord the situation has inspired a feeling of more satisfaction, as a fair number of small orders have been received, and have provided the rolling mills with work.

Some "adjudications" for material required for the Belgian State Railways have just taken place at Brussels. Bessemer steel tyres for locomotives were tendered for by the Angleur Steelworks Company at 8*l.* 12*s.* per ton. The quality of the steel made by the Angleur Company is reported to be excellent. A commission charged with the duty of reporting upon the extended use of iron in the permanent way of railways has assembled this week, and has devoted its attention to the system of MM. Serres and Battig. The commissioners are stated to have been favourably impressed with the simplicity and ingenuity of this system. The British Government has applied to the Belgian Minister of Public Works for circumstantial details as to the operations of the commission. The lowest price at which Herr Krupp of Essen, offered recently to supply steel rails to the Upper Italy Railway Company is now stated to have been 7*l.* 5*s.* per ton (and not 6*l.* 8*s.* per ton, as reported in the first instance), delivered at Genoa. This rectification is authoritative, proceeding as it does from Herr Krupp himself. In 1876 the Grand Duchy of Luxembourg exported 195,608 tons of pig and 1,196,729 tons of iron minerals to Belgium; the corresponding totals for 1875 were 192,782 tons and 1,090,845 tons respectively.

A report on the Austrian iron and steel markets says that, with the solitary exception of those works which are busy with orders for the home and the Russian railways, the Austro-Hungarian iron industry continues to suffer from the stagnant economical conditions which the extremely contracted consumption has brought about. No large orders are in the markets. The small current business in merchant iron is restricted to daily requirements, and even this business can only be done at very low prices. One or two Bessemer works, as already stated, have been enabled to relight a few furnaces, but they are compelled to import hematite and spiegel iron, for the most part from England, Upper Silesia, and Rhenish Prussia. The wagon makers also get most of their iron and steel requirements ready-made from abroad (Belgium, Westphalia, &c.), as their orders are for quick delivery. From this it appears that the inland production is not satisfactory either as regards quantity or quality, or else that the required native materials are not so cheap as those obtained elsewhere. In Bessemer steel goods most of the foundries and works are specially well employed. A liberal demand for fine iron and for fine steel for Italy is also noticeable. A report from Dortmund states that iron prices have now been stationary for some months, and manufacturers generally express hopes that, as regards all the circumstances of the German iron industry, the lowest points have been reached. Demand is meanwhile very restricted.

IMPROVED SPRENGEL PUMP.—The Sprengel air pump as hitherto constructed involves the use of a column of mercury in the fall tube inconveniently long, entailing a proportionately high lift of mercury from the lower to the upper reservoir, and a cumbersome and fragile apparatus. Messrs. J. W. SWAN, of Newcastle, and Mr. C. H. STERN, of Rock Ferry, have invented an arrangement for obviating these defects. The pressure in the upper and lower receivers is reduced by means of an auxiliary air pump or aspirator to any desired point; thus the length of the fall tube can be reduced so as to render the instrument convenient and portable. The mercury is transferred from the lower to the upper reservoir by attaching the latter to a flexible tube and a sliding block, or by having both receivers working on a ground glass centre, so that their relative positions may be re-

versed. The fall tube may be either single or multiple, and the instrument may be furnished with all the usual auxiliary apparatus for lubricating with acids and measuring the progress of the exhaustion. The essential feature of the invention claimed by this provisional specification is the reduction of pressure on the reservoirs of mercury by the preliminary exhaustion with the auxiliary pump or aspirator.

Meetings of Public Companies.

NANT-Y-GLO AND BLAINA IRONWORKS COMPANY.

A special meeting of this company was held at Manchester, on Friday, Mr. HUGH MASON in the chair.

The SECRETARY having read the notice convening the meeting—Mr. SAMUEL OGDEN moved that a reporter be sent for, so as to furnish a correct report of the proceedings, both for the shareholders and the public papers. He complained that the Chairman had tampered with the report of the last meeting by additions, interpolations, and the introduction of correspondence which had not been read at the meeting. This was a most unwarrantable proceeding, and the shareholders were naturally deceived by such garbled report. A strictly verbatim report should have been circulated, without either additions or omissions.—Mr. WALKER seconded Mr. OGDEN's proposition.

The CHAIRMAN ruled that the meeting was a special one, and he could not put such a resolution. He then went on to propose the election, as directors, of the three gentlemen named in the circular convening the meeting—Mr. Stockdale, of Bolton, Mr. Robinson, of Bradford, and Mr. Appleyard, of Halifax.

Mr. RUSSELL EVANS asked if the gentlemen knew anything of the iron and coal trades. The shareholders ought to know what their calling had been, so that they might be able to judge of their fitness or otherwise.—The CHAIRMAN: You know quite as much about them as I do.—Mr. RUSSELL EVANS: Then that is nothing. It is said some of them are drapers.—The several names were put to the meeting, and their election declared carried by a majority.

The CHAIRMAN next moved a resolution confirming all the acts of the board since, by decrease or resignation, the number of directors had been less than the minimum prescribed by the Articles of Association.

Mr. RUSSELL EVANS objected to voting for a cut and dried resolution of this sweeping character without knowing something of the proceedings of the directors. He wanted the details of what they were expected to do. It was a most unusual course to ask shareholders to vote in this manner in the dark.

Another SHAREHOLDER protested against confirming acts of the board without being made acquainted with what they were.

Mr. OGDEN held that the whole proceedings of the board for the last two years had been illegal, and he strongly objected to the passing of the resolution. The directors' mismanagement had brought the company to the verge of liquidation, and unless the shareholders bestirred themselves they would soon have no property left. He concluded by moving an amendment, that a committee of investigation be appointed.—Mr. JAMES seconded the amendment.

The CHAIRMAN maintained that the shareholders had confirmed all the acts of the board up to the last meeting held at the commencement of December. They were now simply asked to confirm what had been done since then.

Mr. OGDEN expressed his dissent from this view.

The CHAIRMAN put the amendment to the meeting and declared it lost by a majority of one. The resolution on being put to the meeting was carried by the like majority of one.—The proceedings then terminated.

GROGWINION LEAD MINING COMPANY.

The half-yearly general meeting of shareholders was held at the Cannon-street Hotel on Thursday.

Mr. G. F. C. SIMMONS in the chair.

Mr. BEDFORD (the secretary) read the notice calling the meeting. The report of the directors and the accounts were taken as read.

The CHAIRMAN stated that Capt. Kitto was not present, but in his absence the report received from him under date Jan. 10, which has already been published, was read by the secretary. He said he regretted Mr. Ross was not in the chair on the present occasion, because that gentleman had represented the shareholders so worthily on the previous occasion, and would have done the same had he filled the chair to-day; but at the same time he could not but esteem it a high honour to occupy the position he did in such a company, for if they looked round they would see nothing but languishing, trade and starvation, and poverty amongst the working classes, and therefore he thought that the shareholders had good reason to be satisfied with the condition of the company. They had plenty of the raw material and ready buyers in the market, and although the price of metal was lower than for some time, they would all agree that lead varied very much less than among other metals in the market, and if it was a little low now they might expect to arrive at a better price before long, when the balance-sheet would be in a still better position. The reports of the directors and Mr. Kitto were so full that they left him very little to say. He regretted that Mr. Kitto was not present, but there were two or three gentlemen at the board, one of whom had recently visited the mine, who would be able to fully explain all the features of the mine. There were one or two points in Mr. Kitto's report which he thought should be alluded to. One was that the No. 4 lode contained no productive driving, and a private letter had since been received from Mr. Kitto confirming that statement in every respect, and stating that the mine never looked better than at the present moment. A great deal of work had been done, showing a total number of 911 fathoms wrought on the course of the lode, and from which they had raised and sold 600 tons of ore, being an average of 13½ cwt. to the fathom. This compares very favourably with the three preceding half-years, particularly when it is remembered that the intermediate and 56 fm. levels on No. 3 lode and the land drift on the No. 1 lode have been comparatively unproductive. Therefore it would be seen that there had been a great deal of productive driving, but having got through a great deal of work of that description, they might hope that there would be much less to do in the future and that more profit would accrue to the shareholders. He did not know that there was any remark to make about the balance-sheet, but he should be happy to reply to any question which might be put. With regard to the Bury Port Port Smelting Company an official letter had been received from the trustees that a dividend of about a shilling in the pound would shortly be paid, which, small as it was, was certainly more than was at one time expected. It was a first dividend, and it was not stated that it was a final dividend. He was glad to see Mr. Horsley present, for although the directors did not always agree with that gentleman, still he represented an important element in the body corporate, and took a real interest in the welfare of the company. At the same time, he must say he entirely differed from Mr. Horsley with regard to the special resolution which he (Mr. Horsley) had given respecting the directors' remuneration, and he would recall to the meeting that on Jan. 30, 1875, Mr. Horsley was one of the very supporters of the resolution under which the directors received their present remuneration. At the meeting in question it was proposed that the directors should have 250*l.* per annum, to be 500*l.* in case a certain dividend was paid, and Mr. Horsley proposed instead the following resolution:—"That instead of the words 'the board shall be entitled to set apart and receive for their remuneration the sum of 350*l.* per annum, to be increased to 500*l.* in every year in which 10 per cent. is paid,' that the resolution shall read thus:—'that the board shall be entitled to set apart for their remuneration the sum of 500*l.*, to be reduced to 350*l.* in any year wherein less than 10 per cent. shall be divided amongst the shareholders.' Therefore, Mr. Horsley was then a supporter of the very resolution under which the present remuneration was being paid to the board, and he must say he failed to see the logic of the argument that the longer the directors served the less the directors should be paid. But Mr. Horsley would make his own remarks on the subject, and he would be left to the meeting to decide whether or not they would adopt the resolution which Mr. Horsley had stated he was about to propose. The shareholders would see that the directors were able to propose a dividend of 2*s.* per share on the old shares, and 9*d.* per share on the new issue, on which 15*s.* per share had been paid, and he thought that, looking at all the circumstances, the shareholders would consider the result satisfactory. (Hear, hear.) In conclusion, the CHAIRMAN moved the adoption of the report and accounts.

A SHAREHOLDER said he could not quite see that the dividend was proportionate to the two classes of shares, inasmuch as he had paid up 1*l.* per share on his new shares.

The SECRETARY explained that at the time the accounts were made up only 15*s.* per share had been paid on the new shares, but a call was due at the time the accounts were made up, which many of the shareholders had since paid.

The CHAIRMAN, in reply to a question, said at the present time the arrears of calls amounted to about 200*l.*

Mr. HORSLEY, having expressed his disappointment that Mr. Ross was not in the chair, said he was very sorry that Mr. Kitto, the manager, was not present. (Hear, hear.) He looked upon Mr. Kitto as a man of unblemished character, and his absence from the meeting was a misfortune to the shareholders. It had been stated at the last meeting, in reply to some observations he then made about the want of additional outlay upon productive work, that the accounts of the then ensuing half-year would show a very different statement in that respect. Upon looking at the accounts now presented he found that the difference in the additional outlay was very slight—889*l.*, against 633*l.*—so that in reality in the past six months, which he apprehended was the most productive six months for general operations, the amount spent in additional work was very little in excess of the previous half-year. With respect to the price of lead in October, 1876, the price realised was 15*l.* 7*s.* per ton, in November 1876, and on December 30 of that year the price obtained was 15*l.* 17*s.* per ton. Coming then to 1877, the first sale began at 15*l.* 12*s.*, and went gradually down over since. The second sale in 1877 realised 14*l.* 17*s.*, then 13*l.* 13*s.*, 13*l.* 11*s.*, 13*l.* 7*s.*, 12*l.* 8*s.*, and again at 12*l.* 8*s.*, and in the last sale they were just beginning to turn again.

A SHAREHOLDER: We cannot help this.

Mr. HORSLEY: No; but it shows an immense difference.

The CHAIRMAN remarked that what he had said was that lead had been steadier than other metals. (Hear, hear.)—Mr. POWELL said tin has gone down from 18*l.* to 60*l.*

Mr. HORSLEY then said Mr. Ross mentioned at the previous meeting that the item of calls paid in advance should not appear in the accounts again, but he saw the item repeated. It was simply paying gentlemen interest for what they were obliged to pay.

Mr. KINT asked whether the interest on the 4000*l.* invested in Cape of Good

* "A Treatise on the Law of Mines and Minerals." By William Bainbridge. Fourth Edition. By ARCHIBALD BROWN, Barrister at Law, M.A., B.C.L. London: Utterworths, Fleet-street.—[First Notice.]

Hope bonds was included in the item of balance at the bankers?—The SECRETARY said it was not.

Mr. LUKE asked whether the error of 25% in the amount of directors' fees noticed at that meeting had been rectified?—The CHAIRMAN replied that the error was made right directly after the meeting, and the accounts now presented would show that the directors took 150% instead of 175%, so as to set that matter right.

Mr. LUKE said there was one remark of Mr. Horsley which he considered to be of a very practical character—that was that there was only 51% in additional expenditure as compared with the previous half-year. It was perfectly obvious that as 2000% had been called up they were paying 10 per cent. on 2000% at present; and, therefore, to the shareholders who had not taken up the new shares this was a source of loss, because they were only getting 4½ per cent. on the Caps of Good Hope bonds.

Mr. KIRBY remarked that they were getting the 4½ per cent. on money received as premiums on the new shares. He had himself taken up new shares at 2½ premium, although they were not so high now.

Mr. POWELL: But you could at that time have sold them at a good premium. Mr. LUKE asked whether it was quite clear that the items of 400% for broken ore and 62½ 10s. 2d. for stores ore on hand were quite correct?

Mr. J. KILLINGSWORTH (the auditor), replying to the questions which had been asked affecting the accounts, said the total amount of new calls was 2000%, of which 1132½ had been spent, and they had now 1193½ in hand. About 200% of this call was yet to be received. Mr. Horsley had rather objected to the calls being paid up in full in advance, but did not quite seem to understand that the directors could not prevent the shareholders paying up in full if they chose to do so.

The CHAIRMAN said no interest had been paid upon those calls paid in advance, but only upon the 15s. per share. With respect to the broken ore and stores ore on hand, those items had been certified by Mr. Kitto.

Mr. POWELL thought it would have been very undesirable to have sold larger amounts of ore while prices were so low as they had been. It would be far better to wait for a time. A great deal of dead work had been done which would have opened up the ground for future development.

A SHAREHOLDER asked why the call had been made if the money was not wanted?—Mr. KILLINGSWORTH replied that the total called was 2000%. Of this 1200% had been received up to the time of closing the accounts, and 800%, since, leaving only 200% to be received. But for this call the capital of the company would have been wholly expended, and it would have been impossible to have done any additional work whatever.

Mr. ROSS read a telegram from Mr. Kitto explaining his inability to attend the meeting. Mr. Horsley had with his usual skill directed attention pointedly to the accounts in many ways, and he as a director was glad that a shareholder should take so much trouble as he did. Mr. Horsley had not that intimate knowledge of mining accounts that he (Mr. ROSS) wished he had, because if he had he would probably not unwittingly drift into the little fog that he does at these meetings. A proportion of the new capital raised had been spent in driving cross-cuts north from the No. 3 lode to intersect No. 4, and that had been quite an unproductive work. A considerable sum had also been spent in improving the machinery, enlarging buddles, extending slime pits, and building a river wall, with bridge and approaches, for the proper protection of the land and their works from floods, and in improving the works generally, all comprised in the accounts, though not identified. He regretted that Mr. Horsley had never visited the mine, because if he had he would have been in a totally different position and able to judge of what had to be done. It would not, perhaps, be out of place for him to remind the shareholders of what the Grogwinion Mine had done since it had been under the present management—since 1872. They had raised and sold something like 50,972½ worth of lead ore, representing about 3670 tons. They had paid in dividends 12,624½, and they had raised and left behind them in the mine as reserves a very large amount of ore—so large, indeed, that he hesitated to name the amount. They had had a long run of unproductive ground between the shallow adit level and the intermediate level—a distance of 36 fathoms in length, and something like 40 fathoms in another, and through which they had had to drive, and which had not produced an ounce of ore. That had all been got through, and every end was now getting into ore. They also possessed a remarkably good lode in the winze now sinking in the bottom of the deep adit level, and Capt. Kitto had just written him to say—"I have been to Grogwinion to-day, and have been through the mine. I have not seen it looking better for a very long time. There is still a good lode in the winze, below the deep adit level and the No. 3. The intermediate and 56 fathom level, on the No. 4 lode, are looking first rate in depth. The mine is looking better to-day than it did twelve months ago." As to paying calls in advance, the directors had done their best to refuse such calls, and had written to shareholders stating that no interest would be paid except on the 15s. called up.

The report and accounts were then unanimously adopted. On the motion of Mr. KENT, seconded by Mr. HORSLEY, Mr. ROSS was re-elected a director, and on the motion of Mr. COUNTRY, seconded by Mr. DAVEY, Mr. Owen was re-elected a director. The election of Mr. W. Brookes, J.P., to a seat at the board in the room of Mr. E. Hilton, resigned, was confirmed, and Mr. Killingsworth was re-appointed auditor.

Mr. HORSLEY then, pursuant to notice, moved the following resolution:—"That the remuneration of the directors (beyond the sum of 250% per annum) shall depend entirely on the net profits earned by the company, and that the extraordinary resolution carried as to the directors' fees be amended to the above effect."

Mr. LUKE seconded the motion.—After a short discussion the motion was negatived on a show of hands. Mr. Horsley having demanded a poll, the result was 276 in favour of the motion and 1263 against, without counting 8613 proxies held by the directors.

Mr. HORSLEY gave notice of his intention to move a similar resolution at the next meeting.—The proceedings then terminated with the usual compliments.

SOUTH DARREN MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices of the company, 8, Austinfriars, London, on Tuesday, Mr. WM. JARDINE in the chair.

The notice convening the meeting having been read,

The CHAIRMAN said that as a full statement of the affairs of the company had been laid before the shareholders at the meeting recently held, it would only be necessary for him to state that the mine had now been fully equipped with all necessary machinery at surface and in the shaft, and that according to the last advices received from the agents the next monthly sale was expected to be 45 tons to 50 tons of silver-lead ore, and 25 tons of rich copper ore. This return, he need scarcely say, would leave a handsome profit on the month's working. He would, therefore, move the following resolution:—

"That under and by virtue of the powers contained in the Companies Act, 1862, section 12, the 5th clause of the Memorandum of Association and the 32nd clause of the Articles of Association of this company, the directors are hereby authorised to increase the capital of this company by a sum not exceeding 4500%."

Mr. BUSH (director) seconded the resolution, which was carried unanimously.

The usual compliment to the Chairman terminated the proceedings.

BAMPFYLDE MINING COMPANY.

The adjourned ordinary general meeting of shareholders was held at the Guildhall Tavern on January 18.

Mr. THOMAS J. SPENCE in the chair. The retiring directors and auditor were unanimously re-elected, and after considerable discussion—it being decided that it was necessary to proceed with the reconstruction of the company on the plan recommended by the directors, there being no other business to transact—the meeting was dissolved.

An extraordinary general meeting was then held, and the CHAIRMAN proposed a series of resolutions for the purpose of carrying the reconstruction into effect.

Mr. ABEL RAINBROUX, one of the principal shareholders, and also a large bondholder, in seconding the motion observed that he had some personal knowledge of the mines, and there was not the slightest doubt that the property was a very valuable one. The course now proposed was the most equitable, and the right one to be adopted under the circumstances, and he understood that already the support of parties holding about half the company's capital could be relied on to carry it through.

The resolutions were agreed to, two shareholders only dissenting, and the proceedings then terminated.

PENSTRUTHAL CONSOLS TIN AND COPPER MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices of the company, Cornhill, on Wednesday, Mr. LABY in the chair.

Mr. E. ASHMEAD (the secretary) having read the notice convening the meeting, the following special resolutions, passed at the extraordinary general meeting held at the Guildhall Tavern, on Jan. 3, were unanimously confirmed:—

1.—By way of compromise, or in satisfaction of the claims of the persons now claiming to be holders or transferees of shares in the company under documents purporting to be transfers thereof, executed not by the persons actually holding the shares but purported to be transferred, but by other persons, and alleged to have been registered, certified, or otherwise recognised by or on behalf of the company, the directors may issue to such persons respectively the same number of shares in the company as fully paid-up without any payment in cash therefor.

2.—In order to provide a sufficient number of shares for the purpose of enabling the directors to carry the preceding resolution into effect, the nominal capital of the company shall be increased by the addition thereto of the sum of 1000%, divided into 500 shares, of 2s. each, beyond the present registered capital of 100,000%, such new or additional shares to be considered as part of the original capital, and to be subject in all respects to the same provisions as the original shares.

3.—The directors may, from time to time, at their discretion, borrow from the directors, members, or other persons any sum or sums of money for the purposes of the company, and may raise or secure the repayment thereof with interest in such manner and upon such terms and conditions in all respects as they shall think fit, and in particular by the issue of the debentures or bonds of the company, or by the creation of debenture stock, or by making, drawing, accepting or endorsing, on behalf of the company, any promissory notes or bills of ex-

change, or giving or issuing any other security of the company, or by mortgage or charge of all or any part of the property of the company, and of its uncollected capital, for the time being.

THE COAL CO-OPERATIVE SOCIETY (Limited).—A special meeting of shareholders was held on Thursday, to accept the resignation of the present committee of management, and to take such steps as the meeting might consider expedient to continue the business of the society or otherwise. The meeting was numerously attended. Mr. Thomas Hughes, Q.C., occupied the chair, and in opening the proceedings he stated that, as they were, the Coal Co-operative Company and the Joint-Stock Coal Company which was founded on a different principle, amalgamated some time ago. At that time an action was pending between the Joint-Stock Coal Company and the Dodsworth Colliery Company, which it was then thought must result in favour of the former company. Unfortunately, it turned out otherwise, and the Joint-Stock Coal Company sustained a loss of about 1700%. This had put the amalgamated company into pecuniary difficulty, and differences had arisen between the members of the committee, which made it imperative on them to call the shareholders together and place the present state of things frankly before them. There were two alternatives—one was to go into liquidation, and the other was to reconstruct the committee. He moved that the resignation of the committee be accepted. A long discussion ensued, principally as to the best means of continuing the business, the question of winding-up not being entertained, and eventually the motion was agreed to, it being understood that the committee should continue in office till their successors were appointed, and a committee of five, consisting of General McRae, Mr. Dooxey, Mr. Anthony, Mr. Webb, and Mr. Archibald Dobbs, were appointed to report to the shareholders, at the annual meeting next month, as to the future management of the society.

(For remainder of Meetings see to-day's Supplement.)

GROGWINION MINING COMPANY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I address myself to you as the Editor of a paper that has done so much for the shareholding interests, to ask in the name of all that is reasonable how much longer the harmony of the Grogwinion meetings is to be disturbed by the ill-advised attacks of Mr. Horsley upon the directors? Anything more pitiable than yesterday's exhibition of primordial malevolence I have rarely, if ever, witnessed before, and it can only be explained upon the assumption that personal annoyance is the primary consideration, and the good of the shareholders the secondary, for after all the saving that is aimed at will not benefit the shareholders to the extent of more than some fractions of a penny per share, and if pushed to extremities it will certainly deprive us of the zeal and enterprise displayed by this board in managing our affairs, and would in such eventuality be false economy of the most vicious kind. Good service should be properly paid for. I should be glad to see the directors take steps to call the shareholders together and dispose of the question at once, and not let our time be wasted at the next half-yearly meeting by a further exhibition of public officiousness. I believe our present board has the full confidence of the shareholders. Let them prove it by attending and voting against Mr. Horsley.

London, Jan. 25.

A SHAREHOLDER.

(For remainder of Original Correspondence see this day's Supplement.)

ECHOES FROM THE MINING MARKET.

Dulness remains the prevailing feature of the Mining Market. There is little appearance as yet of the anxiously looked for improvement in trade, although the latest phase of the Eastern difficulty enables hopes to be entertained of an early conclusion of the Russo-Turkish war, and as a consequence better markets. The principal business now doing is confined to the picking up of cheap shares—such securities as are certain to be amongst the first to respond to any amelioration of the condition of the metals—at prices very tempting to the discriminating investor. Thus, although prices show a want of general support, there is no appearance of any panic, such as has affected of late many other departments of the stock markets. In such times as the present it is scarcely to be wondered that news of any importance from our mines is on a very limited scale; in fact, beyond a rather important private meeting of the larger shareholders of Flagstaff, and the declaration of dividends in West Chiverton and Port Phillip, there is little to impart to the public. As a general rule lead shares are dull, but the continued investment by many operators, who are of opinion that the lowest prices have been reached, maintain quotations at prices lately ruling. Tin shares are very quiet, and plenty of stock is offering, so that sales can scarcely be effected at existing quotations in many cases. Copper shares moderately dealt in, but fairly steady. Foreign shares show signs of drooping values. Port Phillip, however, in consequence of the dividend of 1s. per share, have been well supported, and show an advance on the week.

The Flagstaff shareholders appear now to have arrived at the crisis of their affairs. A comparatively small sum of money is urgently needed for the more immediate embarrassments of the company, and if the amount in question can be raised the reformed board will have breathing time before proceeding to grapple with the complications and claims in Utah. The board as now constituted appears to be working heartily together, and energetically to extricate the company from its present critical position. We understand that an interesting letter from Judge McBride, detailing the exact position of affairs in Utah, is on its way to the board, and may be expected to reach the directors early in February. Directly it arrives a meeting of shareholders will be convened, when a scheme to give the company sufficient funds to meet or arrange the claims will be submitted. This scheme may take the shape of preference capital to the extent, perhaps, of about 10,000%, bearing 10 per cent. preferential dividend, redeemable at a premium. By the latest news from Salt Lake City it appears that after all McCormick's claim may be resolved into a mere lien on the property for the balance of his debt. But this and kindred matters will, doubtless, be fully discussed at the forthcoming meeting, and all our remarks in this column some weeks back, the West Chiverton dividend is 10s. per share. This distribution leaves a balance to be carried forward to the credit of the next account of 1070%. During the last four months the management has sold and delivered 2167 tons of mineral—a larger quantity than has been sold in any previous month. A very good report has been received from Pandora Mine, and the manager makes the gratifying announcement that in future he will be able to increase the monthly sales of lead.

JAMES H. CROFTS.

THE WEEK.

SATURDAY, JAN. 19.—Railways continue gradually to move upwards. Several are now at a high figure, and could not be benefited permanently by peace. York & A. has now reached 116, and Brighton & A. 120. British continue neglected at 86. Russian, 1873, remains at 81; to day's business was said to have wholly consisted of sales by holders here. A pause was noticeable in the buying of Turkish bonds. In mines Eberhardt, Richmond, and Rio Tinto commanded most attention. The first named was rather weak at 75%.

MONDAY.—There was a further private consultation held of the debenture holders in the Flagstaff Company. It was shown that 10,000% was urgently needed. The shares remain ¾ to 1¼. Grogwinion were in request at 4, and Cape Copper at 34; Alamillos, 13½ to 14; Argentine, ¾ to 1¼; Cordes of Chili, 10s. to 15s.; Chicago, 15½ to 17; Port Phillip, 13s. 9d. to 16s. 3d.; Chontales, ¾ to ¾; Don Pedro, 6s. to 7s. 6d.; Wye Valley, 1½ to 2; Yorke Peninsula, 3s. 9d. to 6s. 3d.; Sierra Buttes, 1½ to 1¾. North British closed ¾ lower; the dividend is not expected to be a favourable one, but some time will elapse yet before it is known. So many bears the stock when the last unsatisfactory distribution was made that the stock was easily lifted from 80 to 86. Mexican railway shares continue to look up, and were dealt in to-day at 24%. The price was 1½ when attention was drawn to them in October. They were as high as 6½ in 1874. Tankerville shares were offered at 4½, and Roman Gravel at 8½.

TUESDAY.—Grand Trunk securities seem still unable to rally. There was a further considerable fall to-day. The shares are now no better than 8½, the first preference being 48½, second 29, and third 18½. Argentine was dealt in to-day at 1; South Andros, 9½; Van, 27½; West Chiverton, 13½; and Port Phillip, ¾. Telegraph securities were firm. Brazilian Submarine, 6½ to 7; Cuba, 10½ to 10¾; Direct Spanish, 2½ to 2¾; Direct United States, 12½ to 12¾; Eastern, 7½ to 7¾; Globe, 4½ to 5; Western and Brazilian, 4½ to 5; West India Preference, 8½ to 8¾.

WEDNESDAY.—The delay with the armistice between Russia and Turkey causes considerable weakness in the markets, business in some of which is all but suspended. Turkish bonds are now nearly to their former dull level, the Fives being no better than 9½, the 1871 loan 34, and that of 1854, 49. Egyptian Preference closed at 54, the United at 31½, and Russian, 1873, at 81½. Tin shares keep dull, Dolocath were quoted 2½ lower to-day (31 to 33). Several others were offered, but failed to find buyers. Goldmin, ¾ to ¾; Cedar Creek, ¾ to ¾; Malabar, ¾ to ¾; Javali, ¾ to ¾; Port Phillip, ¾ to ¾.

THURSDAY.—In view of the annual meeting called for the 31st inst. the Port Phillip report is out, and is probably one of the most favourable issued since the incorporation of the company in 1852. There is to be a further distribution of 1s. per share, in addition to that paid in September last. At present the reserve fund amounts to 5368½ 5s., and is invested in Victoria Government Five per Cent. Debentures; it is proposed to now add a further sum of 975%. The special feature is the marked success which has attended the development of the tribute system; every ton of quartz raised has cost 9s. less, and the receipts and expenditure at the mine show a credit balance of 21,477½ 1s. 3d. as compared with 3360½ 10s. 3d. for 1876. There are no liabilities in England, and those in the colony are for Mr. Bland's salary, house rent, and the current expenses. But Mr. Bland had in the colony on Oct. 27 last a balance in hand of 2274½ 12s. 10d.; he has been instructed to pay himself, and the directors infer from the telegram received on Dec. 31, 1877, that he has done so: The dividend of Elly Brothers is to be 30s. per share, and there has already been a distribution of 10s. per share. The dividend will, consequently, be one of 20 per cent. for the year. There is to be an important bonus. Each holder of four shares is to receive a new 10s. share, with 6s. credited as paid. Taking the shares at worth 30s. (to-day's quotation being 31 to 33), this is equal to a gift of 25%, or over 6% per share. The company manufactures military and sporting cartridges in Gray's Inn-lane. Last year's dividend was 25 per cent. Attention has been frequently called to the shares in this article.

FRIDAY (Opening).—Last night the Chancellor of the Exchequer gave notice that he would on Monday move a supplementary estimate for naval and military purposes, and this morning the resignation of two Cabinet Ministers is rumoured; the markets, consequently, open very flat. Consols are ¾ down, Caledonian are only 118½, District 62½, Brighton, A., 117½, and Dover, A., 116½, or 1 per cent. lower in each instance. Russian, 1873, are quoted 79½ to 79¾—also a fall of

1½.—Twelve o'clock.—A recovery has set in, the fall having induced buying. Consols are now 95; Russian, 1873, 80½; Caledonian, 118½ to 119½; Brighton, A., 118½ to 119½. Chatham Preference, after being offered at 80s, are now 80½, buyers. In mining shares, Carn Brea are only quoted 39 to 41; Minera, 13 to 15; and Lianur, 50 to 55. Lianur is a slight firmer, at 15½ to 16. The shareholders of West Chiverton are to have a dividend of 10s. per share.—Two o'clock.—Consols are now ¼ higher than last night (95½ to 95¾). What professes to be the Russian terms have been received here, and it is said they will be accepted by the Porte. Railways are not quite at their best. Caledonian are 118½ to 119½, but have been 119½ to 119¾. Great Western and North-Western show now no change on the day, but Midland and Great Eastern are still down ½ per cent. Leadhills, 4½ to 4¾; Roman Gravel, 8½; South Roman Gravel, ¾ to ¾ (30s. paid); Rookhope, 17s. to 19s. Wye Valley, 1½ to 2; West Wye Valley, 4 to 4½; Grogwinion, 4½ to 4¾; St. Harmon, 2 to 3; Red Rock, 2 to 2½.—Four o'clock.—Egyptian Preference have improved to 54½, and Turkish Fives, that stood firm at the most trying time in the morning, now show a rise to 9½. Chatham Preference are now 81. North Laxey, 4s. to 6s. Parya Mountain, 8s. to 10s. Russian, 1873, are quoted 80½ to 80¾. Caledonians have recovered to 119½.

Burchin-lane, Jan. 26.

FERDINAND R. KIRK.

FOREIGN MINES.

PORT PHILLIP AND COLONIAL (Gold).—The report for the past year states that the balance to the credit of revenue amounts to 6355½, out of which the directors recommend a dividend of 1s. per share, payable on March 1, making, with the distribution in October, a total dividend of 2s. per share, or 10 per cent. for the year. After adding 975½ to the reserve fund there will be a balance of 6565½ to be carried forward.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro, Jan. 20: Produce eight days, first division of January, 11,250 oits.—4368½; yield, 69 oits. per ton.—Telegram, Jan. 23: Profit for the month of December, 9900%.

DON PEDRO.—Mine Captain's intermediate letter for December: The ore has been derived from No. 8 new shoot adit level and No. 8 shoot north ground; little or no alteration has taken place in the quality of the ore since last reported.—No. 8 New Shoot, Adit Level: The No. 1 stope east is still improving in appearance and value, the branches being more defined and regular. This stope has been holed in the very bottom to an old incline from the 30 to the 25, by which we find that there is from 2 to 3 ft. of dead ground between the back laths of the incline and the bottom branch of lode in the ground we are now excavating. The No. 3 stope is also improving, but in the bottom (to bring down the incline road at a regular angle) we have to deal with old timber built formerly to support the then roof, which somewhat impedes our progress in this stope.—South side opening from Western Stope: The ground is very hard for quarrying, consequently our progress slow; the branches continue good in yield, though small in size. The stopes opened on the south side of incline to Symon's shaft have produced low moderate quality ore; the branches are small, but of fair yield.—North Ground: The top branches are very poor at present, but the bottom branches though irregular, still at times give good samples. One of the stopes opened out here is holed to the No. 8 roadway; the other stope is being carried forward across the ground towards No. 7 shoot, to explore the ground here, and to open out more stopes at this point.—Alice's: The cross-cut from No. 2 pass north to open out more stopes, is being prosecuted; some of the clay branches are of fair quality.—Prospective and Running Work: The cross-cut north of western stope being prosecuted vigorously to explore the ground in this direction; in the present end we have some moderate quality ore, and this promises to be a favourable exploratory level.—Alice's Level: Several requisite repairs attended to.—Cross-cut from No. 2 Pass to Symon's Shaft: Two sets put in, and two sets of back laths put away to make the entrance of this level safe. Three repairs sets put in No. 1 side level; the main drift is now in a fair condition, but in consequence of the heavy ground adjoining this will always require some trifling repairs and attention.—Adit level at entrance of No. 8 old roadway: Several repairs made, and sets renewed.—No. 2 Side Level: One set renewed and lathed over. The 30 fathom level cross-cut is partly cleared, several sets spurred and propped where they have required it, preparatory to the resumption of the cross-cut towards the canoa.—South side opening from incline: The pillar of timber for supporting the roof being extended, as the ground above is heavy, and the timber here employed is small. The stopes in No. 8 shoot in back of new level are filled as fast as our force can pass them.—Permanent Pumping Machinery: No repairs have been made since last reported on; 10 in. bucket changed once. A new joint made in 10 in. lift, and the columns turned.—Permanent Pumping Machinery: Bob-pat, all the stuff changed, at surface launders and stand, &c., for same completed, also balance box and water put on the wheel on the 20th to enable us to properly adjust the weight in balance-box, which is done, and the wheel and rods and everything connected works beautifully; the wheel is named Foster's. The remaining works appertaining to same, which are principally in the mine, will be carried on very vigorously until completed.

Telegram from Rio, dated Jan. 23: Produce cleaned up (first division of January), 2000 oits.

RICHMOND CONSOLIDATED.—Telegram from the mine at Eureka, Nevada: Week's run, \$90,000, from 1120 tons of ore; week's produce of refinery, \$60,000.

R. Rickard, Jan. 2: The 200 drift is not looking so well as it was when last reported on; at present the end is poor. The stope above the 200 is looking very well, and producing ore of high grade. The winze below the 200 is held to the rise above the 400; from a point 150 ft. on the incline we have drifted 25 ft., in very good ore. The stope above the 400 is looking very well; the western end is opening out better than it has been for some time. We are now cross-cutting from the 200 main drift to the north, to intersect the ore striking from the stope above. The 500 is still in hard limestone, but the ground is looking more favourable than it has for the last 15 ft. drifting; we expect to strike the quartzite in this drift shortly. The 600 drift on quartzite is still without any change; the contact is close, without any ore. The sinking of the winze below the 900 is going on favourably; at present we have a little water, but not enough to prevent sinking. The furnaces are working well, and smelting their usual quantity of ore.

ALMADA AND TIRITO.—Telegram from Mr. Breach: Docile ore discovered driving to the south of slide in Tiritio; looking well.

BIRKENHEAD.—Telegram from G. S. Powers, Jan. 1: Christmas and New-Year's Day has passed without giving us any water, and at this time there is no indication of a storm of any description. We exploded two blasts on Dec. 28, one of 180 kegs, and the other 220. The execution was everything that we could expect, and we have everything in readiness to turn on the water in the Neece and West claim. I have stopped all work except the Waloupa tunnel. You will recollect that I wrote you on Dec. 18 that we had struck hard rock in this tunnel. I am now happy to inform you that we are well through that hard seam, and have passed good working rock, but not what would be termed easy working rock by the miners. The distance run in December was 64 ft., a falling-off from the month of 94 ft.

EBERHARDT AND AURORA.—Extracts from Capt. Drake's letters, dated Dec. 26 and 31: The hard lime and spar in the face of the Tunnel, reported in my No. 259, date of Dec. 6, continued till the 19th inst., when we met with a decided change of formation, and the rock much more easily worked. We have now followed in this softer material some 50 ft.; the ground is a broken, conglomerated, unstratified mass of lime and spar, intermixed with considerable quartz, and altogether similar to that passed through in the 100 ft. just before meeting with the quartz body on Oct. 24. We can only hope the next change will be a still more favourable one. The quality of the ore development in the mine as last reported continues good, and, therefore, encouraging, and every week confirms more and more our hopes of a large body of it. No special change in the incline. The face of the Tunnel has hardened up somewhat into a vein matter of the same character as that found in proximity to the large ore bodies in our mines, and are compared with solid lime rock far more promising for ore. The men in both mine and Tunnel were faithful to observe Christmas, so that for the day of 24 hours work was suspended. No change in Tunnel drift and no change in the working force.

POVIDENCIA AND NEW ROSARIO.—M. V. Cumins, Dec. 14: Our extraction for the last fortnight amounts to 193½ tons of dressed ore—about 28 tons, worth 8½ per ton. With the exception of about 6 cars from San Miguel and the Quemazon, which was from our north level, the balance of the ore was from San Juan, where we have had 12 men stopping. San Pedro back has not turned out so well as might have been expected, otherwise our extraction of ore would have been larger, and the average of the ley higher. We have decided to remove the men to another working where more ore might be broken, and they have this week been removed to sink on the ore at the bottom of San Diego winze; so far the lode looks well, and is tolerably dry for 1½ vara wide, although the ore is not of high class, and cannot be considered to be worth more than about 9 marcos (9½ 9s.) per ton. Our north level, called San Miguel north end, has been driven about 7 varas since my last letter, and we are now within about 4 varas (11 ft.) of La Paila shaft. I have this moment received a note from Capt. Skewels, and in referring to this end he gives the following particulars: "The dig is now about 1 vara (33 in.) wide. Immediately to the east of it there is a good branch of aquazado about 1 ft. wide, and to the east of the aquazado there is about ½ vara of aquazado (rather leady pinta) mixed up with quemazon, and still further east there is about 1 vara (33 in.) of lode somewhat disordered with horse. The eastern wall is underlying 4 or 5 in. in 1 vara east, and is mixed up with gossan, rendering it probable that there is a lode still further east. To the west of the dig we have quemazon, so as not to be able to tell you how wide it may be." On the whole, we may consider that we have a very promising end indeed. We have already discovered a good width of lode, and do not know how much lode we may still have on each side. In all probability the lodes will be more together in a few varas further north, when, as is usually the case, they will be found to make their great deposit of ore. In referring to San Miguel and San Juan, Capt. Skewels writes me that the former looks much the same, but that the latter is improving in the quality of the ore, and that he judges the value of the stopes to be 1 or 2 marcos more per ton.

YORKE PENINSULA.—The directors have advised, via Southampton, from the committee of inspection at Adelaide, dated Nov. 26. The following are extracts from Capt. Anthony's report:—"Kurilla Lode: Hall's shaft has been thoroughly overhauled and newly timbered from the 35 to the 45, the plat at the 45 enlarged, and strong frames put in. Sinking to the 55 will begin about Dec. 1. The 45, east of Hall's shaft, is suspended, as is also the 35. Neither of those drives, though producing ore, would pay for driving further east with the present price of copper, and it was thought better to put the men to sink winzes at Morphet's 20, east and west of the engine-shaft, to lay open for tribute works the ore ground there. At the 45, west of Hall's shaft, the lode has been varied about 10 ft. north, and it has split into three distinct branches. A good deal of water is issuing from this drive, and it will not be surprising if it drains the upper drives about Deeble's and Grainger's shafts. This drive is now about 5 fms. west of Deeble's, and will be vertical to Grainger's in another 15 fms. It is driving at the low rate of 7½ 10s. per fathom. Should no change take place in the hardness of the ground, Grainger's shaft will be reached in about three months from now. The winze is holed from the 35 to the 45, east of Hall's shaft, in the bunch, and a good tribute pit laid open thereby. After setting the pitch in the 45, west of the hauling shaft, at 50 in 1½, a great improvement occurred by the discovery of a deposit planting to the

south, and was taken, and taken out—level in the The drives is not being will average the low price the winzes works, regarded it that in cotton in 2 tons of part of the is about the perty. Also more veins that it pro parallel lode cross-cut better, lode port as have been. A full and there is MALAB the extra the slides in the day and to record heavy slides done any weakened down, fortunately covered the damage, resuming to-morrow in time for will prove and owing the clean up

LEAD (Jan. 5)

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TIRITO.—

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South, and apart from the main lode, from which about 40 tons of 20 per cent. ore was taken, in addition to the yield of the lode proper, the deposit has all been taken out.—Morpeth's Lode: Having completed the timberwork at the 30 fathom level in the engine shaft, and having laid open good tribute ground; the whole of the lode drives in the 30 and 35 fathoms, and the yield in the portions being wrought is not being carried in either drive, but the yield in the portions being wrought will average from 3 to 4 tons of 17 per cent. ore per fathom. In consideration of the low price of copper, I intend keeping the shaftmen driving those levels until the winzes now sinking below the 20 are holed, and the lode laid open for tribute works. . . . In the 20 east the lode is rather more settled, but it has not yet regained its former regularity and yield. Captain Anthony proceeds to report that in continuing the cross-cut from the 20, on Morpeth's lode, mentioned in his last report he had discovered another branch 18 in. wide, and equal in thickness to the main lode. And he adds—"I may say further of this part of the mine, that the mica slate surrounding the branches already met with is about the most promising ore-bearing strata that we have found in the property. Also that water continues to issue from the end of the drive, indicating more vein stuff further north, and this water contains copper in solution, showing that it proceeds from ore. The inference is that we have got into a network of parallel lodes and dividing planes, or small cross-courses, and that a system of cross-cuts from our present workings would lay open still further, and may be better lodes." Ore Returns: The 100 tons of ore mentioned in last month's report as having been dispatched from the mine, have been shipped per Carnarvon, and a further 100 tons were in course of shipment at Adelaide per Bundabell, and there remained on the mine ore of the estimated value of 2500*l*.

MALABAR.—G. B. O'Reilly, Dec. 9: Our work has been much interrupted by the extraordinarily wet weather, during the continuance of which we had several slides in the ditch, rendering it necessary to suspend washing very frequently by day and totally by night. Up to date of writing we have only 250 hours running to record instead of 400 as we had hoped. On the night of the 3rd inst. a very heavy slide of bank came down from a portion of the ground where we had not heavy slide of bank for the last two years. The hill appears to have become weakened by the heavy rains, and without any washing an enormous mass came down, completely filling the mine for a width of 300 ft. and a length of 500. Unfortunately a few feet of the edge of this run touched our two monitors and covered them up completely. On the 4th we got out both monitors, and found the damage much less than we expected, but still quite sufficient to prevent our resuming washing for some days; however, we expect to have one ready in place to-morrow, and the other on the 2nd day later. The clean-up will be effected in time for the small leaving Hinda the 20th inst. The result I am much afraid will prove far from satisfactory, as we have only hitherto got in about 250 hours, and owing to the accident to our monitors I much doubt if we can do more before the clean up.

LEAD PROSPECTS IN THE UNITED STATES.—The Eureka Sentinel (Jan. 5) states that the nominal price of lead in the New York market is 4½ cents, but as there are no transactions at that figure, it can hardly be called the selling price. The supply is largely in excess of any present or future demand, and large stocks of the article are accumulating in dealers' hands. The depressed state of the market makes quite a difference to the Eureka district, as they are turning it out at the rate of 75 tons per day, and at the present price it does not pay the cost of transporting the crude bullion to the refineries. The Richmond Company are accumulating a large stock of refined lead, and look to a foreign market for a sale. If any demand can be created for it in China, it is probable that the bulk of the production will flow in that direction.

ALMADA AND TIRITO CONSOLIDATED SILVER MINES.

TIRITO.—Capt. W. Clemon, Nov. 15: The branch working in the first lode south of the engine-shaft, below the tunnel level, shows more ore than it did last week. Our prospecting cross-cut through the south side at the tunnel level still shows some spots of ore, but has no change since last week to report. We have now begun to stop the two ends of the winze in the 42; this bunch of ore is 17 ft. long and 5 ft. wide, and of good quality ore. The ground in the 54 and 60 driving north is more favourable for driving than it has been, and shows some spots of green ore.

PROVIDENCIA.—The lode in this place continues without change.

MINA GRANDE.—The west branch has slightly improved in the past week; the lode is getting wider, and lengthening to the north. We have now resumed the winze sinking in the 12; this winze is all in solid ore, of very fair quality. The driving of the 24th has also been resumed. Nothing to report.

TIRITO.—Nov. 22: The branch working in the first lode, south of the engine-room, below the tunnel level, continues to produce very fairly. Our prospecting cross-cut through the south side is now stopped, and we have now begun to drive west from the end of the cross-cut to cross-cut the lode; the end is still spotted with green and black ores. The lode in the 42 ft. level has no change. The end driving north in the 54 has nothing new to notice.

PROVIDENCIA.—The lode in this place has very much improved in the past week.

MINA GRANDE.—The west branch has no change to report. The winze sinking in the 12 is now 9 ft. long and 5 ft. wide, in solid ore, and appears of much better quality. The ground in this drive, driving north in the 24, is very hard and spare for driving.

Nov. 29: Tirito: The branch working in the first lode, south of the engine room below the tunnel level, continues the same as when last reported on. We have now begun to stop in this same branch above the tunnel level, where we have a branch of ore 9 in. wide, and 15 ft. long. The drive west from our prospecting cross-cut through the south side continues crossing the lode, and nearly every day meets with very good spots of green ore. We ought now to resume the driving of the cross-cut south-east to prove the ground under the Soledad, where we were costeering, as we can prove this ground at much less cost and more satisfactorily from this point than at the surface. In our costeering works we sunk a shaft on the line of the lode, and cross-cutted from the bottom east and west. We found several indications of the lode's existence by several walls we saw in the shaft cross-cuts, and in the trench opened across the hillside. Some of these walls have nearly the same course as the lode, therefore, I think, they must belong to the lode. I think we have seen all at surface that we can reasonably expect to see, therefore, I would recommend by all means to prospect this lode from the tunnel level. This cross-cut must cut all the branches and walls, and I think more distinct at this depth than nearer the surface. The stopes in the 42 from the ends of winze in this place are now coming to a close. The 54 end driving north at this level appears to be a little more favourable for driving, but has no other change to notice.

PROVIDENCIA.—The lode in this place continues to improve. We have now commenced to sink a winze below the tunnel level. In this winze we have about 4 ft. of very good green ore.

MINA GRANDE.—The west branch appears to be of better quality ore than formerly, but no other change to mention. The winze sinking in the 12 has no change to report. The ground in the 24 end driving north at this level appears to be a little easier for driving.

Frank W. Breach, Nov. 15: We this week started driving the 54 north in Tirito, and the 24 north from the Balvanera shaft, and also sinking the winze in the 12 to connect with the 24 in the Mina Grande. In the 54 (really commenced last week) the ground improves for driving, and also in appearance, as we leave the cross-cut. In the cross-cut south through the slide (at the tunnel level) we have spots of ore—reported last week. By Saturday we shall be about 20 ft. south of the slide, and propose turning the drive to the south-west, in order to cross-cut the lode at right angles with its course. The ground continues very easy for driving. The furnace is now progressing well, and we shall commence running the castings for it to-morrow. So far we have no scarcity of water, but should no rain fall we may expect to feel the effects of the drought very seriously.

Nov. 22.—The drought I am very sorry to say still continues. Letters received from Manzanillo and Acapulco state that the price of maize has risen to treble its usual value. The new crop in the South will be in the market by January, and if it is favourable it will help to keep down famine prices, but no more, as the news from the State of Chihuahua and the Sierra generally is very bad. From Capt. Clemon's letter you will note the ground is improving in the Providencia workings in the tunnel level. We are sinking on the best part, and the ore improves as the winze goes down. In the cross-cut through the south side we have turned the end to the south-west, and the communication could be made with the tunnel in a short distance should ore be found to pay for working. As we proceed the end shows more ore, and generally the ground is very promising. In the Mina Grande winze, sinking below the 12, the ore appears to be changing its character, and getting more coppery. In the 24 ft. level cross-cut, from the Balvanera shaft, we drove a few feet west, in order to get into a better course of ground before driving direct for the winze above mentioned. We have now turned the end to drive straight for the winze in somewhat better ground, but still it is an extremely hard, felspathic porphyry, and will be a slow and costly end to drive. Should the ore not dip to the south, and thus diminish the distance we shall have to drive, this cross-cut will cost at least \$2000, including stores and pumping and winding. As soon as the 24 ft. level is opened out for working I would advise a winze being sunk simultaneously with the Balvanera shaft for a depth of 100 ft., if necessary following the ore in any dip it may take, so as to ensure being able to drive the level on the shortest line to reach the ore. By this means expensive cross-cutting would be limited to every 100 ft., instead of every 72 ft. as at present. On Saturday last we commenced casting the old iron into shoes and dies for the mill, and castings for the roasting furnace. Everything worked extremely well, and I hope to effect a considerable saving in Mazatlan and San Francisco bills for castings.

Nov. 29.—I have nothing to add to Capt. Clemon's letter of this date. We have great hopes of cutting a course of ore south of the south side.

Dec. 6.—I do not enclose the usual report from Capt. Clemon to-day, as he has just returned he had to go in the mine. There is really nothing to report, except that the lode in the 12 ft. level winze in the Mina Grande appears to get more solid, and to contain more copper as we get down. Mr. Clemon has tried the ore as a whole, but does not find the ley has improved. At the same time some odd stones selected from the output of the winze yielded from \$261 to \$300 per ton. I hope this may indicate a change for the better in depth, as ore of so high a ley has not been met with previously among the black ores of this mine. The improvement in the winze sinking from the tunnel towards the 10 in the Providencia still continues, and work is being pushed hard at this point to ascertain if we may incur the expense of driving under the winze from the 10 north. In the 54 north we have driven across the lode diagonally, the ground on the west side being very unpromising. We have now cut the footwall in dead ground, without meeting with more than stones of ore occasionally in the level. In the cross-cut south of the slide, on the tunnel level, we are still going through lodey ground, horses, with divisions of ore ground between them.

As regards the water available for our use here it very sensibly falls off every week, and only that the ground in the mine is not yet drained of the water accumulated during the stoppage of the pumps after the fire, we should now be very scarce of water for irrigation. As it is we feel the want of it, and all the wells are worked to the utmost. In view of the now all but certain failure of water, and of our having to receive the greater part of the fuel required until the end of August next, I see no other way to meet the expenditure than stop nearly all exploration underground. I have consulted with Mr. Clemon and Capt. Clemon, they are of the same opinion. We shall from the winze in the 12 (Mina Grande) extract sufficient black ore for the furnace, and it will at the same time prove the lode to the 24, the end driving in which we shall have to stop for the time. The 54 north (Tirito) will also have to be stopped. I would make an effort to drive the 54 south, but that the lode can be explored on the tunnel level at considerably less

than half the cost of the 54 end, and it is our opinion that the probability of meeting with ore is equal in both places. South of the slide will, therefore, be the only exploration carried on, until either the necessary amount of fuel is laid in or we have water sufficient to irrigate the ore from both furnaces when the new one is completed.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

PLACERVILLE GOLD QUARTZ COMPANY (Limited).—Capital 50,000*l*, in 2*l* shares. To acquire the several mines and properties in the Placerville mining district, county of El Dorado, State of California, United States of America, according to an agreement made between J. Courtney of the one part, and P. A. Eagle of the other part. The subscribers (who take one share each) are—C. S. Elliott, Cambridge Villas, Tudor-road, Upper Norwood, no occupation; G. E. Bowie, 16, Austinlars, no occupation; L. C. Duncan, 3, Newman's-court, Cornhill; M. S. Owen, 3, Newman's-court; A. S. Owen, 3, Newman's-court, ship broker; W. Saunders, Thornton Hill, Wimbledon, stockbroker; N. G. Elliott, 54, Pembroke Villas; W. R. Bird, Pall Mall Club, S.W. The directors are—Messrs. R. Bird, J. E. Bowie, and C. S. Elliott, the qualification being 50 shares, and the remuneration 100*l* per annum for each director.

SWANSEA ZINC ORE COMPANY (Limited).—Capital 35,000*l*, in 10*l* shares. To acquire the patent granted to E. A. Parnell in respect of an invention for improvements in the manufacture of zinc and sulphuric acid, and by means of this process to extract and manufacture spelter, zinc, &c. The subscribers are—T. W. Richards, Swansea, merchant, 50; J. D. Jones, Swansea, merchant, 50; J. Hall, Swansea, merchant, 50; H. E. Fry, Uplands, Swansea, merchant, 50; G. B. Power, Llesmore House, Swansea, merchant, 50; M. Moxham, Swansea, 50; W. Davis, Bridgford, colliery proprietor, 50. The directors are—Messrs. W. Davis, John Fry, E. A. Parnell, T. P. Richards, S. B. Power, and H. E. Fry, the qualification being 10*l* shares.

ST. GEORGE'S CHEMICAL AND ASPHALTE COMPANY (Limited).—Capital 50,000*l*, in 2*l* shares. To manufacture various chemicals, as well as asphalt. The subscribers are—G. P. Anderson, Brabant-court, E.C.; A. Bresson, Forest Hill; R. Cooper, 22, Angel-road, Brixton; John Gower, 64, Broad-street, Cheapside; C. J. Hodgson, 7, Grove Hill, Dulwich; J. Priestly, 129, Cheapside; A. Smith, 30, London Wall.

STANDARD STEAMSHIP INSURANCE ASSOCIATION (Limited).—This company is limited by guarantee to 5*l*, the object being the insurance of steamships.

BLACKWALL GALVANISED IRON COMPANY (Limited).—Capital 20,000*l*, in 100*l* shares. To acquire land at Orchard-street, Blackwall, and to carry on business as manufacturers of corrugated iron, &c. The subscribers (who take one share each) are—E. Brooker, 2, Rood-lane; S. L. Dove, 2, Rood-lane; J. M. Hutchinson, 56, Douglas-road, N.; J. J. Andrews, Benwell-road, N.; Alfred Hindall, 4, Lime Villas, Brockley; D. Evans, The Chestnuts, Holloway; W. H. Palmer, 171, Queen Victoria-street.

GWYNEDD SHIPPING COMPANY (Limited).—Capital 100,000*l*, in 20*l* shares. To purchase or build ships, and to carry on the general business of a shipping company. The subscribers are—W. J. Williams, Bethel, Carnarvon, 2; E. H. Jones, Bangor, 1; M. Thomas, Rhingod, near Carnarvon, 12; W. Jones, Choly, 2; J. Davis, Carnarvon, 2; Thomas Currie, Llanberis, 2; W. Williams, Ebenezer, Carnarvon, 5.

FRANCO COLONIAL COMPANY (Limited).—Capital 10,000*l*, in 5*l* shares. To acquire the patent of J. L. D. Montolson for the manufacture of a substance known as meletoline, or coffee substitute. The subscribers (who take five shares each) are—S. B. Davis, Altrincham; F. W. Ewen, 22, Dale-street, Manchester; Alfred Watkinson, Mass-lane West, Manchester; Thos. Hinks, Ashton, Chester; E. Easton, Manchester; R. T. Clegg, Accrington; S. Swan, Piccadilly, Manchester.

LONDON BRIDGE DISCOUNT COMPANY (Limited).—Capital 20,000*l*, in 2*l* shares. To carry on a general discount business. The subscribers (who take one share each) are—B. R. Wood, Shelley-terrace, Stoke Newington; C. L. Dixon, 188, Brockley-road, S.E.; R. W. Taylor, Richmond-road, Dalston; E. Collier, Grange Gardens; G. A. Hemming, Dane's Inn, Strand; G. Robertson, City United Club.

LICENSED VICTUALLERS MUTUAL ASSOCIATION (Limited).—Capital 2000*l*, in 1*l* shares. To deal in foreign wine and spirits, &c.

FRYER AND COMPANY (Limited).—Capital 20,000*l*, in 20*l* shares. To carry on business as cigar and tobacco merchants at Dewsbury, Yorkshire. The subscribers are—A. H. Fryer, Dewsbury, 150; J. Tate Dewsbury, 10; W. Fryer, Dewsbury, 105; S. Wainwright, Dewsbury, 20; J. D. Good, Merfield, 10; S. H. B. Walsham, Dewsbury, 30; C. Barradough, Dewsbury, 5.

LIVERPOOL MUTUAL MARINE INSURANCE ASSOCIATION.—This company is limited by guarantee, the object being the mutual insurance of ships belonging to members.

R. C. JONES AND COMPANY (Limited).—Capital 50,000*l*, in 5*l* shares. To take over and continue the chocolate and confectionery business. The subscribers are—Thos. Wheeler, High Wycombe, Buckinghamshire, 350; John Macmoeckin, Missenden Abbey, Buckinghamshire, 50; J. F. Bowman, Stereograph, Hertfordshire, 300; R. C. Jones, Acton-street, Haggerston, 700; O. A. Bowman, Acton-street, 50; E. E. Scott, Queen Victoria-street, 1; E. T. B. Church, Lincoln's Inn, 10.

WEST COAST OF AMERICA TELEGRAPH COMPANY (Limited).—Capital 300,000*l*, in 10*l* shares. This is a reconstruction of the old company bearing the same title. The subscribers (who take one share each) are—Neil Bannatyne, 15, Eaton-square; H. Knowles, Reigate; A. R. Johnston, Fairfield, Harrow; T. Silver, 66, Cornhill; W. H. Silver, 66, Cornhill; Matthew Grey, St. John's, Black heath; S. Silver, 66, Cornhill.

FILBY FISHERY, HARBOUR, AND PIER COMPANY (Limited).—Capital 50,000*l*, in 10*l* shares. To construct a pier, &c., at Filby Bay. The subscribers (who take one share each) are—T. Claxton, Filby; T. Haxby, Filby; J. Welborn, Filby; J. Young, Hull; M. E. Peck, jun., Hull; S. Towse, Filby; W. W. Anton, Filby.

DESIGN AND COLOUR SINKING AND FIXING COMPANY (Limited).—Capital 30,000*l*, in 20*l* shares. To supply moneys required for carrying on a scientific experiment and process of Dr. George Hands for the purpose of fixing design on bone, ivory, wood, &c. The subscribers (who take one share each) are—C. W. Mackillop, 14, Royal Crescent, Bath; G. H. Smith, 3, Plowden Buildings, Temple; George Hopkins, 30, Parliament-street, S.W.; W. C. Molloy, Nutfield, Weybridge, Surrey; J. L. Broden, 7, Silwood-place, Brighton; C. J. Clarke, 10, Delahay-street, S.W.; John Bayliss, 5, Victoria-street, S.W.; R. E. Blake, Hertford College, Oxford; W. Horsley, 11, Bull and Mouth-street, E.C.

MIRROR ADVERTISING COMPANY (Limited).—Capital 12,100*l*, in shares of 30*l* and 1*l*. To acquire a certain invention of an improved looking glass frame to be used for advertising and other purposes. The subscribers (who take one share each) are—James Frisby, 87, Moorgate-street; J. Dugod, Wheatley, Oxon; C. S. O. Watkins, 22, Fenchurch-street; J. Burbridge, 62, Moorgate-street; T. Whitstone, 57, Amwell-street, E.C.; H. Laxton, 9, Pall Mall; Alfred Albutt, 4, South-street, Finsbury.

GOODY, CRIPPS, AND SONS (Limited).—Capital 50,000*l*, in 10*l* shares. To take over the business of Mr. Charles Goody, Parliament-street, Liverpool, marble merchant, and the business of Mr. Richard Cripps, Redcliffe Wharf, Bristol, marble merchant. The subscribers, who take five shares each, are—Chas. Goody, 17, Parliament-street, Liverpool; R. G. Cripps, Macclesfield-street, City-road; R. Cripps, Redcliffe Wharf, Bristol; H. R. Cripps, Redcliffe Wharf, Bristol; S. B. Cripps, 17, Parliament-street, Liverpool; H. Goody, 17, Parliament-street, Liverpool; S. H. Absom, 17, Parliament-street, Liverpool.

GAS OR VAPOUR ENGINES.

Some improvements in engines worked by the internal combustion of inflammable gas or vapour and air have been invented by Mr. JAMES ROBSON, of North Shields. One arrangement consists in a cylinder closed at both ends. He uses one stroke of the piston to draw in a charge of gas or vapour and air on one side of the piston by means, preferably, of a flap valve, and on the return stroke this charge is forced through passages and valves into a combustion reservoir, and retained there by suitable valves until the piston returns to the back end of the cylinder. A valve now opens a communication between the reservoir and the back side of the piston, and also brings the inflammable gases in the reservoir into communication with a flame, and ignites them; their expansion then drives the piston forward, which by a connecting rod turns a crank shaft and fly-wheel at the end of this out stroke, and during its return a valve is opened for the escape of its contents from the back of the piston, and the port to the reservoir is closed. Two reservoirs can be used, these being alternately brought into communication with each side of the piston at each successive stroke. In some cases a slide for the supply of gas and air instead of the flap valve may be used. An ordinary engine governor is used in connection with a wedge and cock for regulating the supply of gas or vapour.

The second arrangement consists in drawing a mixture of gas or vapour and air into a pump, in which works a piston, placed beside of and communicating at the bottom with the cylinder of the engine in which cylinder works a piston with a rack gearing into a pinion running free on the fly-wheel shaft, when the piston and rack ascends, but grips the shaft when the piston and rack descends. The gases are ignited by a flame when the pump piston is near the top of its stroke, said pump being in communication with the piston in the cylinder on its under side; the pressure from the explosion then acts on the surface of the piston, and same is driven up. The pump piston is worked by a crank rod, to which is secured a cog-wheel, which gears into another wheel fixed on the fly-wheel shaft of the engine. On each side of the cylinder is placed another cylinder, each having an air-tight piston and rod working therein.

The tops of their rods are attached to a cross-head fixed to the rack. When an explosion takes place in the pump, the rack, piston, cross-head, and the two side vacuum pistons are driven rapidly up to the top of their cylinders, the pressure of the air on the top surfaces of the vacuum pistons forcing them and the rack down again to the bottom; thus, the energy of the explosion is absorbed in the up stroke of the vacuum pistons, to be given back again in their descent. Instead of vacuum cylinders and pistons indiarubber or metallic springs may be attached to the rack to absorb the energy of the explosion in the up stroke, and return it in the down stroke.

The third arrangement is a modification of the second arrange-

ment. The pump draws in gas and air through a valve, then compresses them into a reservoir communicating with the rack cylinder; a slide then closes the communication between the pump and the reservoir, and then the gases are fired in the reservoir, the explosion produced propelling the piston and rack and vacuum pistons up, as in the second arrangement. A valve is then opened for the escape. Springs are also applicable to this modification instead of vacuum cylinders. These arrangements are simply different forms of carrying out the invention, and the details thereof may be varied to suit practical requirements.

PREVENTING INCrustation IN BOILERS.

An improved apparatus, either placed within or attached to the exterior of boilers, for the purpose of removing therefrom all such impurities and foreign matters as would, if allowed to accumulate, produce incrustation on the interior surface of the boiler-plates, has been invented by Mr. S. T. SHUTTLEWORTH, of Bishopgate-street Within. When the apparatus is to be applied to the exterior of the boiler a receiver formed of iron or other suitable metal is attached to the bottom thereof. The upper part of the receiver forms a chamber into which the water from the boiler enters through apertures in the bottom of the latter, a communication between the chamber and the lower part of the receiver being provided by means of a slide valve, which is actuated in the manner well known and understood. When the slide valve is opened, the water and all impurities and foreign matters pass by gravitation through the openings in the valve into the receiver. The ends of the moveable portions of the slide valve are formed with knife edges for the purpose of cutting and acting upon the solid matters which may become deposited in front of the same, and thus prevent the valve from being clogged or jammed when actuated. The receiver is provided with a jet cock by which the water can be discharged therefrom when the slide valve is shut, leaving only the solid matters deposited, and which can be removed by opening a door which is placed at one end of the receiver for that purpose. The receiver may extend the whole length of the boiler, or beneath one portion thereof only.

When it is impracticable to attach the receiver to the exterior of the boiler, as for instance in the case of the latter being imbedded in the ground, the apparatus is placed in the interior of the boiler, the receiver being suspended in or attached to the same, and a communication being formed between them by means of a slide valve, as in the arrangement previously described, provision being also made at one end of the boiler by which the door of the receiver can be opened when desired for the removal of the solid matters contained. This invention can be applied to new boilers, or may be adapted to old boilers with great facility.

AMERICAN SUBSCRIBERS.—In reply to several enquiries, it may be stated that subscribers in the United States can be supplied with the *Mining Journal* post free, at the price of \$8 50c. gold per annum, payable in advance, by remitting to Mr. D. Van Nostrand, publisher, and importer of scientific books, &c., Murray-street, New York; or, direct to our Office, 26 Fleet-street, E.C.

LEAD ORES.				
Date.	Mines.	Tons.	Price per ton.	Purchasers.
Jan. 24	Roman Gravel	20	£11 10 0	Walker, Parker, and Co.
—	ditto	50	11 16 0	Adam Eytton.
—	ditto	50	12 1 6	ditto
—	ditto	50	11 15 0	George Burr.
—	Ladywell	10	10 10 0	Adam Eytton.
—	ditto	10	10 10 0	George Burr.
—	Roekhope	40	11 5 3	J. Dinning.

COPPER ORES.

Sampled Jan. 2, and sold at the Royal Hotel, Truro, Jan. 17.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Devon Great Consols...	85	£1 15 6	Gunnislake (Clitters)...	98	£4 11 0
ditto	84	1 12 6	ditto	98	4 10 6
ditto	81	1 12 6	ditto	90	4 16 0
ditto	76	5 11 0	ditto	98	4 5 6
ditto	75	1 12 6	Marke Valley	85	2 12 0
ditto	74	4 15 0	ditto	80	2 9 6
ditto	73	1 15 0	ditto	69	5 2 6
ditto	72	6 1 0	ditto	60	2 10 0
ditto	71	1 15 6	ditto	45	2 19 6
ditto	70	1 15 6	Glasgow Caradon	92	3 11 0
ditto	67	5 7 6	ditto	80	3 8 0
ditto	51	1 11 6	ditto	28	2 4 6
ditto	50	1 15 6	Hington Down	82	2 17 0
South Caradon	85	3 5 6	ditto	55	3 7 0
ditto	62	4 0 6	ditto	40	2 6 6
ditto	58	4 1 0	Phoenix	62	6 2 0
ditto	57	3 12 0	ditto	58	2 0 6
ditto	56	5 16 6	ditto	60	3 2 0
ditto	53	10 1 6	Bedford United	60	2 17 0
ditto	52	4 16 6	ditto	56	3 4 0
ditto	47	10 6 0	Dingle's Ore	10	3 0 6

TOTAL PRODUCE.					
Devon Great Con.	929	£2585 0 0	Hington Down	177	£ 510 19 0
South Caradon	470	2560 8 0	Phoenix	170	653 8 0
Gunnislake (Clit.)	870	1694 13 0	Bedford United	116	350 4 0
Marke Valley	240	1053 5 0	Dingle's Ore	10	30 5 0
Glasgow Caradon	200	660 18 0			
Average standard		£ 94 4 0	Average produce		£ 3 12 6
Average price per ton			Quantity of fine copper		188 tons 9 cwt.
Quantity of ore		2752	Amount of money		£10,093 15 0
LAST SALE.—Average standard		£ 89 7 0	Average produce		£ 3 12 6
Standard of corresponding sale last month		£ 96 8 0	Produce		6½

COMPANIES BY WHOM THE ORES WERE PURCHASED.			
Names.	Tons.	Amount.	
Vivian and Sons.....	700½	£2409 7 9	
Grenfell and Sons.....	426½	1870 6 0	
Neill, Druce, and Co.....	194	1348 10 6	
Williams, Foster, and Co.....	608½	2248 9 11	
Mason and Elkington.....	245	544 17 0	
Charles J. Lambert.....	449½	1679 3 4	
Total.....	2752	£10 098 15 0	

NO SALE on Thursday last, January 24.
Copper ores for sale at Tabb's Hotel, Redruth, on Thursday next—Mines and parcels.—West Tolgus 346—Mellancare 330—West Seton 190—South Crofty 97—East Pool 59—Wheal Basset 43—Carn Brea 41—North Trekerby 31—South Roskear 29—Penstruthal 27—West Godolphin 22—Champion's Ore 22—Roberts's Ore 14—Peuberty's Ore 12—Poldice 5—Stephens's Ore 5.—Total, 1273 tons.

WATSON BROTHERS' MINING CIRCULAR.

Ten years ago the weekly information which had previously been published for a great number of years in *WATSON BROTHERS' Mining Circular* was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the *Journal* on the Clementina Mine.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fortnightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when, properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. WATSON, F.R.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and sharedealing than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

WATSON BROTHERS,
MINEOWNERS, STOCK AND SHARE DEALERS, &c.,
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

Stock Exchange men claim 10 days (after settling-day) for the delivery of stock and shares; this gives rise to much inconvenience, and often considerable annoyance to clients, who do not understand it, and get impatient at the non-delivery, and blame their brokers, who are not strictly in fault. The time thus given also affords opportunities for "bears" to work mischief on the undelivered shares, to the injury of the buyers. It has become a question, then, how far this rule, which may be binding on the Stock Exchange and between two members of the House, should be so upon outsiders, and those outside who act for them. The question has often been mooted, and the best remedy we can suggest to our correspondent is that in buying shares make it a special contract that they should be delivered at once, or at the account, and that he would not be in any way bound by the rule of the Stock Exchange. Shares ought to be delivered within a reasonable time, and if parties who sell fail so to deliver they should be made to pay for any damage or inconvenience arising out of their own neglect.

SOUTH ROMAN GRAVELS.—We are among the largest shareholders here, and are not altogether disheartened. Many thousands of pounds have been spent on the present workings, which were confined to sinking the shaft recommended by the best practical agents in the district. But it is evidently in the wrong place, having got into hard greenstone. There is, however, a large tract of set unexplored, and capital in hand; and something may yet be found in new ground to reward the outlay of the shareholders.

PRINCE OF WALES.—At the last meeting it was resolved to clear Vigor's shaft on the silver lode; this has just been accomplished and the prospects for silver will soon be ascertained.

SOUTH D'ERESBY MOUNTAIN LEAD MINING COMPANY.—Our attention has been called to the notice of this company in last week's *Journal* (page 63), where it is said to be in 30,000 shares of 1/2 each, "for the purchase and working a mining property, the locality of which is not given." We know nothing of the company, or of the parties connected with it, and it certainly is not for the purchase and working a mining property on the D'Eresby Mountain.

GLENROY.—In the 25 the lode has got clear of the slide, and some rich stones of lead and blende have been broken from it this week.

D'ERESBY MOUNTAIN.—The agent's report, in another column, is very encouraging, and indicates a great mine ere long. The end in No. 3 adit is coming into ore; and the Gorse lode continues worth three tons of lead per fathom. We hope next week to have some information in regard to the wheel and crusher, and the ore likely to be ready for them.

SATURDAY, JAN. 19.—Market very quiet. Carn Brea, 40 to 42 1/2; Dolcoath, 32 to 34; South Condurow, 9 to 10; Tincroft, 12 to 14; D'Eresby Mountain, 50 to 60; Great Laxey, 21 1/2 to 22 1/2; Herodsfoot, 9 1/2 to 10 1/2; Roman Gravel, 8 to 9 1/2; Tankerville, 4 1/2 to 5; Van, 28 to 30; West Chiverton, 13 1/2 to 14 1/2; West Wheel Tolgus, 75 to 77.

MONDAY, JAN. 21.—Market continues inactive, and the following are merely nominal prices: Carn Brea, 40 to 42 1/2; Cook's Kitchen, 2 to 2 1/2; Devon Great Consols, 3 to 3 1/2; Dolcoath, 32 to 34; D'Eresby Mountain, 50 to 60; East Van, 2 to 2 1/2; Grogwinlon, 4 to 4 1/2; Great Laxey, 21 1/2 to 22 1/2; Herodsfoot, 10 to 11; Leadhills, 4 1/2 to 4 3/4; North Laxey, 4 to 4 1/2; Parys Mountain, 8 to 9; Penstuthal, 4 to 5; Roman Gravel, 8 to 9 1/2; Rookhope Lead, 17 to 18; South Condurow, 9 to 10; Tankerville, 4 1/2 to 5; Tincroft, 12 to 14; Van, 28 to 30; West Chiverton, 13 1/2 to 14 1/2; West Patry Bridge, 1 1/2 to 2; West Wheel Tolgus, 74 to 76; Wheal Agar, 4 to 4 1/2; Wheal Grenville, 2 1/2 to 3; Wye Valley, 1 1/2 to 2; West Wye Valley, 4 to 4 1/2; Eberhard, 7 1/2 to 7 3/4; Richmond, 8 1/2 to 9 1/2; Chontales, 3 1/2 to 3 3/4; Flagstaff, 15 to 20; New Quebrada, 2 1/2 to 2 3/4; Penstuthal, 5 to 5 1/2.

TUESDAY, JAN. 22.—Market again very quiet, and prices about the same as yesterday.

WEDNESDAY, JAN. 23.—Market quiet, and prices are merely nominal. Roman Gravel, 8 to 9 1/2; D'Eresby, 50 to 60; Tankerville, 4 1/2 to 5; Van, 28 to 30; Great Laxey, 21 1/2 to 22 1/2; Leadhills, 4 1/2 to 4 3/4; South Condurow, 9 to 10; Dolcoath, 31 to 33; Tincroft, 12 to 13; West Tolgus, 74 to 76; Herodsfoot, 10 to 11; Grenville, 2 1/2 to 3.

THURSDAY, JAN. 24.—Market very quiet, and there is little alteration in yesterday's quotations.

FRIDAY, JAN. 25.—Market generally very quiet. Great Laxey firm. Carn Brea, 39 to 41; Dolcoath, 31 to 33; South Condurow, 9 to 9 1/2; Tincroft, 11 to 12; Great Laxey, 21 1/2 to 22 1/2; Roman Gravel, 7 1/2 to 8 1/2; West Chiverton, 13 1/2 to 14 1/2; Grogwinlon, 4 to 4 1/2; Devon Consols, 3 to 3 1/2; Leadhills, 4 1/2 to 4 3/4; Parys Mountain, 8 to 9; Rookhope, 17 to 18; Tankerville, 4 1/2 to 5; Van, 27 to 29; West Tolgus, 74 to 76; Pever, 6 to 6 1/2.

RUSSIA COPPER COMPANY (Limited).—In the case of this company a resolution had been passed for winding-up the company voluntarily since the presentation of a petition by a shareholder for a compulsory order, and the Master of the Rolls therefore directed the voluntary winding up to be continued, under the supervision of the Court. Mr. Chitty, Q.C., and Mr. Lake appeared for the petitioner; Mr. Roxburgh, Q.C., Mr. Whiteborne, and Mr. Chester for other parties.

DIAMOND FUEL COMPANY (Limited).—A petition for a winding-up order was presented by a holder of fully paid shares, alleging that the company was insolvent and unable to pay its debts. The Master of the Rolls dismissed the petition with costs, on the ground that, as the petitioner was a fully paid shareholder, he was under no liability in respect of his shares, and, as the company was insolvent, he could not have any interest in the assets of the company, and was, therefore, not entitled to present the petition. Mr. Ince, Q.C., and Mr. C. H. Turner appeared for the petitioner; Mr. Chitty, Q.C., and Mr. Farwell for the company; and Mr. Whiteborne, Mr. Everitt, and Mr. Bradford for other parties.

LYNN, TONDU, AND OGMORE COAL AND IRON COMPANY.—A petition for the voluntary winding-up of this company, and for the appointment of Mr. J. J. Smith, the secretary, as provisional liquidator, was filed on Saturday in the Court of Vice-Chancellor Malins by the authority of the directors, and with a view of the reconstruction of the company.

HOLLOWAY'S OINTMENT AND PILLS—COLDS, COUGHS, SHORTNESS OF BREATH.—These corrective remedies are infallible for these pectoral complaints, which, neglected, often end in asthma, bronchitis, or consumption. The ointment, well rubbed upon the chest and back, penetrating the skin, is carried directly to the lungs, whence it expels all impurities. All the blood in the body constantly passes through the lungs, and there all noxious particles tending to produce disease can be quickly, thoroughly, and permanently neutralized, rendered harmless, or ejected from the system. Holloway's ointment and pills perfectly accomplish this purification; and through the blood, thus cleansed, the influence of these wonderful medicaments reach the remotest parts of the human body; and thus cure all diseased action whether internal or external.

Mining Correspondence.

BRITISH MINES.

ABERDAUNANT.—S. Toy, Jan. 23: The cross-cut at the 15 is now driven north towards the lode 7 fms. During the past week we have met with a good floor of ground, and the men have made better progress in driving than usual. We have also met with a nice-looking branch of barytes 3 in. wide, containing some good lead, which is bearing about east and west, and underlying towards the lode as a feeder. These feeders I think are very promising for a good lode in depth. By the present appearance of the ground and dialling, unless the lode is gone down more perpendicularly, I think we shall intersect it by driving the cross-cut about 9 ft. more, which we may accomplish, and cut through the lode in about a month, from this time.

BETTSY-VOED.—H. T. Haley, Jan. 21: Since my last the ground in the shallow adit is a little easier for driving, and from its appearance I think we shall have an early improvement. The deep adit is yielding good stones of lead. The 20 is worth fully 35 cwt. of lead per fathom, and looking well. The shaft-men have made fair progress in sinking, and the lode is without change since last week.

BLUE HILLS.—S. Bennetts, A. Gripe, Jan. 19: The main lode in the 80, east of the engine-shaft, continues large, of a promising character; and, although containing some good stones of lead and copper, not of much value. The top lode, in the same level east, has improved, and contains a leader of good tin stuff 10 in. wide, worth 100 l. per fathom. The ground in the shaft below this level, on the main part of the lode, continues favourable for sinking. On the north lode the 30 east has slightly improved, and at present is worth about 4 l. per fathom. The stop above this level is not so productive as it has been.

BODIDRIS.—H. Hotchkiss, Jan. 22: The lode in the 70 yard level west is well defined, and contains good specimens of blende. In the 60 yard level cross-cut south I am pleased to say we find occasionally lead ore and blende interspersed throughout in the rock, with a good quantity of spar now in the end, which is a very good sign of nearing a rich lode. The winze in the bottom of the 45 yard level is going down in a very promising lode, which is now 15 in. wide, chiefly spar and lead ore, interspersed throughout with less blende. In the rise in the back of this level, 20 fathoms east of shaft, the lode is 14 ft. wide, with good outcrops of lead ore making in the lode. The cross-cut driving north at this level is much the same as for some time past; the ground is precisely the same as when we commenced the cross-cut, in which measures we had our best ore in the middle lode. I am urging all points on with all speed possible in hopes of soon being able to advise you of better results by the cutting of the two master lodes, which I hope to do by the time specified in my report for the general meeting.

CAMBRIAN MINES—ESCALIER-VALE.—Thos. Glanville, Jan. 24: Eastern Shaft: We have commenced sinking the eastern shaft below the 23; the part of the lode being sunk on is producing at least 3 tons of rich copper ore per fathom. The lode in the 23, east of shaft, is composed of gossan and rich copper ore, and worth for the latter 2 tons per fathom. In the 23, west of eastern shaft, we are driving a cross-cut south through the gossan part of the lode, which is yielding a strong mixture of copper ore.

CARGILL.—John Jennings, Jan. 24: We have completed all the necessary work in the shaft, such as fixing a new standing lift, rods, &c.; also put in a new piston and rod to the engine, so that our engine is now in full working order, and have again resumed the sinking of Bowyer's shaft below the 34. I have to the eight shaftmen 9 fms. extent, which is the required depth to the 44, as per bargain—1300 l. (os.), which is at the rate of 14 l. 10s. per fathom, and the men are working in good earnestness. The branch that dropped in the shaft about 10 feet below the 34, which was then only 6 in. wide, has increased in size to fully 1 ft. wide; it seems to be underlying north or crossing the shaft, but this will be proved in further sinking; this branch still produces lumps of mundie, little lead with a beautiful flookan, and quartz spotted with copper ore. I consider this to be a very promising and encouraging feature for the level below. The 34 west is still producing small quantities of lead, but not enough to value; a kindly lode. The stop in back of this level west of shaft is producing its usual quantities of lead, and is inclined to improve. We have met with nothing of value as yet in the 34 cross-cut north from the south lode, only small branches of lead. In the main adit west we have met very heavy swelling ground in the footwall of the lode, which is streaming with water, and from the mundie and sandy stuff washing out, should think there must be another lode crossing or forming a junction with the present lode just before us; however, this I hope to prove shortly.

CLEMENTINA (Lead).—W. Bennetts, Jan. 23: Setting Report: Set the 34 end of the shaft, at 5 l. per fathom. The lode here has been pinched rather small, but is opening wider, and we believe that it will soon get into lead, especially as we are getting under the run of lead at the 25. Rise in the back of the 34 at 6 l. 10s.; worth for lead about 7 cwt. per fathom. We expect to communicate this with the winze at the 25 in about a week from the present time, which will ventilate the 34 and open a good run of stopping ground on both the north and south and east and west lode, and give facilities for driving the ends at the 34.

COMBARTIN.—J. Comer, Jan. 24: There is no change to note in any of the bargains since the report for the general meeting.

COURT GRANGE.—James G. Green, Jan. 24: The engine-shaft is down 3 fms. 12 in. below the level of the 2 fms. 4 ft. from the top to complete the 3 fms. 7 1/2. bargain. Now that tackle, penthouse, and dam are fixed there will be less hindrance in the work, and better progress may be expected. In stripping down the lode in the 65 we find it strongly impregnated with blende, with occasional nice stones of lead—re-set to two men, at 90s. per cubic fathom. The same remark applies to the 55—re-set to four men, at 80s. per cubic fathom. We have cleared and timbered 17 fms. of the 45 fm. level east; the old workings at this point are very wide, so that progress is slow and difficult; re-set to four men, at 50s. per fm. The part of the lode carried in the 30 east is over 2 fms. wide, and there is still more lead standing on both sides. I intend cutting through it before driving further; the lode is poor for lead ore. The lode in the end of the 14 is 3 fms. wide, the main lead being on the south side about 4 ft. wide, carrying a rich mixture of ores of a most promising description, and appearing better to-day than anything I have seen in the mine—worth fully 25 l. per fathom. Both these ends were set at our last measuring for two months, consequently prices continue the same. I have set four men to sink a trial winze or sump on a branch of lode in the shallow adit, at 6 l. per fathom, producing occasional stones of rich ore. Francis's shaft is down from surface 36 fms., and requires to be sunk another 2 fms. to be deep enough for the 14 l. level. When this depth is attained, and a few feet extra for sump, we shall at once commence driving south to the lode, and afterwards continue the level west on the course of the same, where I hope to meet with good results. In conclusion, I am glad to say the mine is opening up satisfactorily. Every effort is being made to get surface work forward, but progress is slow owing to the wet and stormy weather which prevails.

CWM DWYFOR.—Joseph Jewell, June 24: I have no change to report, as the miners have been desiring since my last report. I have ordered them to blast down the lode in the No. 3 level, west of the south cross-cut, and in the stopes; this will be done by Saturday next. I shall send out samples of two small parcels of lead this week. We find a difficulty, owing to the frost and snow, in dressing the smalls.

D'ERESBY MOUNTAIN.—Jan. 24: Gill's upper level to drive east on the new lode; the lode is 1 1/2 ft. wide, producing saving work. A winze to sink under Mitchell's level west, on the new lode; the lode is 2 ft. wide, worth 14 cwt. of lead ore per fathom, or 1 ton for the length of the winze; evidently this will be holed to the stop below in a few days. In a stop in back of Gill's upper level, on the new lode, the lode is 3 ft. wide, worth 1 1/2 ton of lead ore per fathom for 6 fms. in length, and can be stoped and trammed to dressing-floors for 60s. per fathom. In the stop in back of the 12, on the new lode, the lode is 1 ft. wide, worth 15 cwt. of lead ore per fathom. In a stop in back of the intermediate level, on the new lode, the lode is 2 ft. wide, worth 15 cwt. of lead ore per fathom. In a stop in back of the level below the 12, on the new lode, the lode is 3 fms. wide, worth 12 cwt. of lead ore per cubic fathom. It will take about nine days to fill the still, and then the men will be able to work to an advantage. In Mitchell's cross-cut, driving north by rock-drill, the ground is rather stiff for driving. A pitch in back of Gill's upper level, on the new lode, is set as a stop. In the pitch in the 15, east of Kingside shaft, on Kingside lode and branches, a nice ore lode is going down under the level, worth 1 1/2 ton of lead ore per fathom. In a pitch in back of the 3, Pugh's shaft, on the Comet lode, is poor. The pitch in back of Level Fawr, on the copper lode, is set on tutwark; the lode is worth 12 cwt. of lead ore per cubic fathom for 3 fms. in length. During the past month Mitchell's cross-cut has been extended north 6 fms. 4 ft. 3 in. in a stiff slate, and in this driving we have not observed any sign of a lode making its appearance, and the end is now very dry. The men in Gill's upper level have finished their stint, and the end and stopes are now set in separate bargains, four men in each. We hope to form the communication with the winze now in the course of sinking under Mitchell's level, and the stopes in the back of Gill's upper level. In a few days we shall have an extensive piece of ore ground open, and in a position to break at least 35 tons of lead ore per month. Thus with the large quantity of ore stuff now broken on the mine the future returns can be safely calculated on at 40 tons a month. The rock driving, with all other machinery, is in fair working order, and we save nice ore stuff with a good supply of water. We weighed 8 tons of lead ore into the bin on Saturday last, Jan. 19.

DE BROKE.—J. Phillips, Jan. 23: The lode in the 45, driving east of Wilson's shaft, is becoming wider, and more mixed with spar, but still has a fine appearance, and is worth for lead ore 15 l. per fathom. The 45 west is producing very good patches of ore, the lode also intermixed with good-sized branches of copper and blende. The 35 east has just touched upon the caunter lode, and we are opening northward in some rich branches of ore in the main lode, the width of which has not yet been ascertained. The stopes (three in number) in the back of the 35 will make an average produce of 25 cwt. of lead ore per fathom, and the stopes in the back of the 26 about 10 cwt. per fathom. Dressing, surface, and underground work is going on steadily.

D'ERESBY MOUNTAIN.—William Bennetts, Jan. 23: Setting Report: No. 3 adit is set at 13 l. per fathom; the lode is 3 ft. wide, and producing good saving work for the dressing-floors. There is a remarkable feature here—a large vugh in the bottom of the end, on the hanging side, which is letting out a large stream of water, which indication rarely ever fails to precede a good bunch of lead. No. 4 adit is set at 12 l. per fathom for the whole width of the lode. The Gorse lode is producing the same quantity of lead as usual—3 tons per fathom—and a good mixture of blende. We have cleared up the winze on the Gorse lode 8 fms.; this is on the heading side, and good patches of lead are to be seen standing in each end of the winze; the winze is 30 fms. in advance of the other course of ore, and the ground stands intact from 15 to 5 to surface. We are pushing on No. 5 as fast as possible, and we hope in about a month to get through the worst of it. We are glad to say that the mine never looked better than now, and as we have said before, we anticipate the completion of No. 5 with great satisfaction.

DENBIGHSHIRE CONSOLIDATED.—R. Prince, Abel Francis, Jan. 24: Parry's Shaft: We have had a great deal to do during the past week in levelling the ground, so as to facilitate the removal of the stuff to our 112 level. Pipes have also been laid to convey the water from the shaft via the sump and swallow, so that the engine-lamp now be dispensed with, and the shaft utilized as a ladder-rope.

The rising upon the same part of the lode, the 112 level presents a very nice show of lead. We think we have intersected in the east level one of the feeders of the Coed-y-fedw lode, but a full report shall be sent for the meeting.

DERWENT.—J. Morphet, Jan. 21: I beg to hand you the accompanying list of bargains let here on Saturday last, with the usual estimates of ore, &c.:—Jeffries' Shaft, Middle Vein: The 95, 67 fms. east of shaft, is by the side of lode; a pair of six men are employed on No. 1 stop in the back of this level, and stripping down the lode in this level some 50 fms. east of shaft, where the lode is 5 ft. wide, and yields 30 cwt. of ore per fathom. No. 2 stop, 46 fms. east of

shaft, is 7 ft. wide, looking better, and now producing 15 cwt. of ore per cubic fathom. No. 3 is 6 ft. wide, and produces 11 cwt. of ore per fathom. No. 4 is 7 ft. wide, and produces 13 cwt. of ore per cubic fathom. No. 5 stop is 4 feet wide, and worth 10 cwt. of ore per fathom. The sides over this level, 32 fms. east of shaft, yield 20 cwt. of ore per cubic fathom. The cross-cut at this shaft at the 95 is now across 40 fms. 2 ft. wide, and is without change. The 95, 15 fms. west of shaft, is 3 ft. wide of vein, and although poor, looks very promising; following this end in the back we are working three stopes, whose respective widths are 9, 11, and 11 cwt. of ore per fathom; average width of vein about 3 ft. We have put four men to cut sides in the back of the 95, 95 fms. west of shaft, which yield 15 cwt. of ore per cubic fathom.—Sun Vein: This vein in the level under the 70, 15 fms. west of sump opposite shaft, is 1 ft. wide, and very poor. The stopes in the back, 7 fms. west of sump, is 3 ft. wide, and worth 11 cwt. of ore per fathom. The vein in the bargain driving and stoping 7 fms. east of sump is 3 ft. wide, and worth 12 cwt. of ore per fathom, and the stopes 4 fms. east of sump is also 3 feet wide, and produces 22 cwt. of ore per fathom. The stopes under the 40, 43 fms. east of shaft, being cut for tramway is at present very poor; vein 1 ft. wide. Westgarth's Shaft, Middle Vein: The 93, 56 fms. east of shaft, is by the side of vein. The clearing of the 93 west we hope to proceed with forthwith. The 74 fm. level, 187 fms. west of shaft, at the bottom of High Coal sill, is 1 ft. wide, and yields 6 cwt. of ore per fathom; and the stopes in the back, 5 fms. behind the end, yields 11 cwt. of ore per fathom; vein 2 ft. wide.—Surface: The machinery, except the drawing machine, where we had a breakage on Thursday, is all working very well. Repairs to the machine will be completed to-day, and the drawing in Jeffries' shaft resumed to-morrow. Quite open weather, and water in abundance for everything.

DEVON GREAT CONSOLS.—Isaac Richards, Jan. 25: Wheal Josiah—Richards Shaft: In the 300, both east and west, the lode is 3 1/2 ft. wide, consisting of capel, quartz, peach, and a little mundie. In the 280 west the lode is 2 1/2 ft. wide, composed of capel, quartz, and a small quantity of mundie.—Wheal Emma—New Shaft, New South Lode: In the 190 east the lode—part carrying, 5 ft. wide—is composed of very fine capel, mundie, quartz, and copper ore, worth 3 tons, or 9 l. per fathom. In the 175 east the lode, 4 ft. of which is being carried, is composed of capel, quartz, mundie, and copper ore, worth 5 l. per fathom. In the 175 east the lode is 4 ft. wide, consisting of very fine capel, quartz, and some copper ore of good quality. In the 175, west of Gorrell's winze, 4 ft. of the lode is being carried, which consists of very fine capel, quartz, mundie, and copper ore, worth 3 tons, or 6 l. per fathom. In Hodge's winze, sinking below the 180 east, the lode—part carrying, 4 ft. wide—is composed of capel, quartz, mundie, and some copper ore of good quality. In the 180 east the lode is 4 ft. wide, composed of capel, quartz, mundie, and some good quality copper ore. In the 100 east, on the south part of the lode, the lode is 5 ft. wide, composed of very fine capel, quartz, mundie, and copper ore, worth 1 ton, or 3 l. per fathom.

DUBBY SYKE.—W. Tallentire, Jan. 18: Dubby Syke Level: We have now driven about 4 fms. east on the vein from the point of intersection, driving at the bottom of the limestone. We are pushing on to try this point as fast as possible; there is no change of importance to notice yet.

EAST DARREN.—Jan. 23: In the 80, east of the cross-cut, on the south lode, the lode is 2 ft. wide, yielding 1 1/2 ton of lead ore per fathom, and ground stiff for exploring. In the 80, west of the cross-cut, on the south lode, the lode is 3 feet wide, and looks more promising, containing a little blende and lead ore. In the winze sinking under the 80, on the south lode, the lode is becoming stronger, containing spits of copper, mundie, and small branches of lead. The repairing of the adit level, and putting in dam will be completed this week, when the men will commence sinking under the 80, on the south lode, in productive ground to prove the same in depth. The tribute pitches (four in number) are without change to be noticed. Our machinery is in good order, and the drawing of ore stuff progressing regularly. The present wet weather much interferes with our progress in the dressing of ore but yet hope to sample 35 tons of silver-lead ore on Tuesday next, Jan. 29.

EAST VAN.—Wm. Williams, Jan. 24: I have nothing new to report from here, Tempest shaft—down to the 65, and we have this afternoon commenced crossing shaft, mixed with mundie, and good quality yellow copper ore, showing every appearance of being large, and similar in character to the 95, below the same, 15 fms. farther west. The lode in the winze sinking below the 105, east of engine shaft, is looking exceedingly healthy; worth 25 l. per fathom. The drive of the 117 east is resumed by the side of the lode, in ground good for progress, which course we purpose to continue for some short distance previous to cutting into or taking the lode, for the principal object of facilitating the advance of this point to come up in the run of ore ground described in the winze coming down from the level above.

The tribute department is without change during the past week. The shaft in the 80, east of the 65, and the shaft in the 65, east of the 80, are now going to divide and sheath the shaft down, which will take about 10 days to do, so that the machine kibble may run to the bottom for the stuff, and when that is done we shall complete the lode and resume sinking. The lode is still from 8 to 9 ft. wide, but unproductive. The side branch or lode going off north-east has now opened out north of the slide to 3 ft. wide, containing some good stuff for lead and blende; as the end looked to-day Richards and myself considered it would pay its cost of driving. Should it fall off I will stop the end, but no one would do so as it now looks. We have a good pile of stuff on the floors, which shall be dressed up.

GORSIEDD AND MERLLYN CONSOLS.—Wm. Edwards, Jan. 24: In the north cross-cut we have had troublesome ground to go through, but I think that the break we can now see on both sides of the level will prove to be the east and west lode. A few days more and I think we can report a discovery. In the levels driving east and west from the new shaft the ground continues very hard, so that progress is but slow, but I think we shall soon have a change. In the bottom west level the lead is improving a great deal. In the upper west level there is more lead in sight, and the ground looks very promising for opening out. The bottom east level looks better this morning than it has done for some time past. The stopes in the west have improved.

GREAT DYLLIFE.—Evan Evans, Jan. 23: At the 132, east of Dyllife lode, we have commenced stoping the ground that we were stripping last week, and it will make a good stop. Our stopes at the 95 east are this week again looking very fair. We shall be able in another week to resume the driving of this level forward. The new lode in the drivings in bottom of winze does not look so well as it did last week, but we have a nice string of ore in the east end. In the other winze on this lode the lode is much the same, mixed with strong blende and some very good stones of lead ore. The ground is very unsettled so near the surface. At the 105, which was the level of the 105, the lode is still showing, and the winze is still in a new stop, which promises to be a good one. We shall value it next week. At the 95, west of Bradford shaft, we are stripping the lode in a place where we found the drivings were not on the lode, and it is worth about 15 cwt. per fathom. We shall have ground to stop in this place for six months. At the 95, east of Bradford shaft, we have 10 men stoping, the ground being worth about 30 cwt. per fathom. We commenced tramming from this place to-day. The cross-cut at the 105, east of Bradford shaft, is not yet in the lode. The ground being very tight and hard, the progress last week was not so much as we expected.

GREAT HOLWAY.—Jan. 24: Everything is progressing favourably at this mine. The level engine is working well, the water now runs down now 38 yds., so that we have had greater success in this operation than was expected. We are also very busy with the pit-framing on Roskell's shaft, and finishing clearing the adit.—Partridge Shaft: We have put men to cross-cut from the side of the level to intersect another lode, which we think will be found at no great distance from the level. We have, I am glad to say, taken out some nice specimens of lead from this cross-cut, and I believe it will bring us to something good. So far we have been successful in all operations since the starting of the mine.

GREAT LAXEY.—W. H. Rowe, Jan. 23: The lode in the Welsh shaft sinking below the 155 is without any power change to notice. As much of the lode as is opened in driving the 330 north is worth 30 l. per fathom. The south stopes lode is worth 35 l., and north stopes stopes 25 l. per fathom. We have removed No. 2 stopes to the sole of the 220 immediately above, where the lode is worth 30 l. per fathom. Although kindly looking the 220 end north continues poor. This driving is still several fathoms short of where the division takes place in the level above. Two stopes in the roof of this level are worth in the one case 30 l., and the other 20 l. per fathom. The winze on the eastern branch in the 210 is in a comparatively poor bar of ground at present, though still worth about 10 l. per fathom. The driving southward from No. 1 cross-cut has fallen off lately, though now looking to improve again; worth 25 l. per fathom. The driving upon the same part of the lode in the 200, after opening a considerable length of good ground, is now setting near the other level, the lode dividing into small branches. The stopes below and above this level, and throughout this part of the mine average in value about 25 l. per fathom.—Dumbell's: The ground is favourable for sinking in the shaft below the 215. No improvement to notice yet in the 200 north. A stopes in the sole of this level south is worth 25 l. per fathom. The 185 end north has considerably improved of late, now worth 40 l. per fathom. A stopes in the sole of the level south is worth 30 l. per fathom. The lode in the winze below the 140 fm. level north has much improved lately, now worth 35 l. per fathom. The 140 winze is worth 20 l. per fathom. What is seen of this end going north is again improving, and the 140 level is at present poor. The stopes in the level, and throughout the remaining part of Dumbell's, will average 22 l. per fathom. The lode in the 110 end, driving north with a full force, is again kindly looking. At present it is only about 15 in. wide, and composed of spar and blende chiefly. The driving south of the rise above Day level and stopes are pretty much as last reported.—South Ground: Under this head may be named the 235, south of engine-shaft, where the ground has suddenly become hard again, and the lode not having been fully proved in the last 20 fms. we are now preparing to cross-out it. We are giving earnest attention to a rather large and important section of ground in the 165, south of the engine-shaft, chiefly productive of blende. A considerable length of the level has been cleared, wagon road repaired, and a fire-trail of the ground is also encouraged by the fact of there being 20 fms. above and 25 fms. below of entirely whole ground. The sinking in the sole of the 145 south is worth 25 l. per fathom. Another through a piece of ground over the 60 south is worth 24 l. per fathom. In the cross-out now going eastward from under the 60 washings there is in the last few days a feeder of water issuing from the end, which we hope may be coming from the lode.

GREAT RETALLACK.—J. Harris, Jan. 19: The lode in the 53 west is yielding saving work for blende. The lode in the 5

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Original Correspondence: London Coal Supply (W. Thompson); Compressed Air—Its Application for Pumping (J. G. Green); Hand-Power Compressor; Pumping Machinery; The Blende Trade (G. G. Taylor); Richmond Mining Company; Flagstaff Mining Company (T. G. Taylor); Mining in Queensland (J. V. Williams); Public Companies in the Future (M. F. Dornier); Home Industries—National Wealth—No. II. (T. Vosper); Joint-Stock Enterprises (R. Tredinnick); The Mineral Resources of Ireland—No. I. (T. Tonkin); Rookhope Mining Company; Rookhope Lead Mine, and its Management (R. Byron); Hingston Down Consols; Great Caradon Mining Company; Great West Van; Wheel Livingstone; North Laxey, and its Management; North Laxey Mining Company (G. Males); North Laxey Mine; Llanrwst Mine (W. F. Richardson); New Consols; Mining Probabilities (G. Budge); Hingston Down Consols—Meetings of West Chiverton, East Chiverton, Bodidris, and Mining Company of Ireland, &c.

TO THE METAL TRADE.

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The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, JAN. 25, 1878.			
IRON.	2 s. d.	1 s. d.	2 s. d.
Pig, 60 lb., f.o.b., Clyde.	2 13 0	13 0	0
Scottish, all No. 1.	2 13 0	13 0	0
Best, Welsh, f.o.b., Wales	5 0	5 0	10 0
“ In London.	5 15 0	6 0	0
“ Stafford.	7 0	0	8 0
“ In Tyne or Tees.	10 0	15 0	15 0
“ Swedish, London.	9 15 0	10 0	0
Rails, Welsh, at works.	6 0	0	5 6
Sheets, Staff., in London	8 15 0	9 0	0
Plates, ship., in London	7 0	7 0	0
Hoops, Staff.	7 15 0	8 0	0
Nail rods, Staff. in Lon.	6 10 0	7 0	0
STEEL.			
English, spring.	14 0	0	19 0
“ cast.	35 0	0	45 0
Swedish, keg.	18 0	0	0
“ flat, ham.	17 0	0	0
LEAD.			
English, pig, common.	18 17 6	19 5 0	
“ “ L.B.	19 5 0	—	
“ “ W.B.	20 0	—	
“ sheet and bar.	20 0	—	
“ pipe.	20 10	—	
“ red.	2 8 0	22 10 0	
“ white.	2 5 0	28 0	
“ patent shot.	24 0	—	
Spanish.	18 10 0	18 17 6	
NICKEL.			
Metal, per cwt.	10 0	21 0	
Ore, 10 per cent. per ton.	15 0	30 0	
QUICKSILVER.			
Flasks of 15 lbs., ware.	7 5 0	—	
SPELTER.			
Silesian.	15 10 0	18 17 6	
English, Swansea.	21 0	—	
Sheet zinc.	22 10 0	24 0	

* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1s. 6s. per box more than 10 quoted above, and add 6s. for each X. Tinned-plates 2s. per box below tin-plates of similar brands.

REMARKS.—Our markets are in an undecided state, and great caution is still necessary and wisely observed by most merchants in entering upon fresh engagements of any magnitude, for it is considered that an unpremeditated or false step taken just now might jeopardise or lose the advantages which have been so hardly gained by a long and strict neutrality from all risky and dangerous enterprise. It is said that discretion is the better part of valour; and our commercial men would frequently do well to profit by the lesson which is inculcated by this good old maxim; and there can be no two opinions that in perilous times extra caution in business is more commendable than venturesome dealings, especially at a period like the present, when it is particularly necessary to avoid running the risk of incurring losses, as the amount of legitimate trade is limited, and the profits upon it are so small that no opportunity is afforded of making good any serious deficiencies which might arise from bad debts or from unfortunate speculations; it is, therefore, behoves everyone who esteems his own reputation and welfare, as well as the interests of others, to exercise extreme care and vigilance, and to make his position secure, if possible, against all contingencies, and it should be the chief consideration, however tempting the inducement may be to deviate therefrom. No one at the best of times is justified in going out of his depth, but it would be the height of folly to do so now, and we strongly recommend the contraction of credit within reasonable limits. Failures in the present age have become so common—we might almost say fashionable—and creditors generally display such eagerness to accept any compromise that may be offered, that in many cases it seems as if people break to make themselves, and the disgrace and dishonesty often attending such practices appear to be soon forgotten, for when such people resume business they obtain quite as great facilities and are received as favourably as those who have always kept faith with their creditors, and, strange as it may appear, they sometimes even enjoy greater credit than they did before their failures; and inasmuch as they get released from their former liabilities, their financial position is undoubtedly improved; we will not, however, speak for their morals; but it is to be deeply regretted that there exists no public mark or supervision under which such persons ought to remain until they have redeemed their characters by discharging their old debts, and thereby entitling them to rank upon an equality with those who have always paid their obligations in full. Everything should be done to enhance the position of the upright and honest traders by protecting them from injurious competition, for it is easy enough for one man to undersell another if he intends others to pay for it in the end; but this sort of crime ought to be severely punished, that our commercial morality may be maintained, and not allowed to suffer by such corrupt practices.

There are some few, however, who are occasionally brought down by the recklessness of others, and not from unwarrantable speculation on their part, or by any other fault of their own, and if ordinary precaution is proved to have been observed, such deserve commiseration and help to enable them to retrieve their fallen position. We trust that the metal trade will long continue to enjoy a high reputation for honesty and integrity, and that it will never be led into a loose system of credit such as recently reported from America, where merchants, in the face of a more or less discredited kind are said to form a prominent feature for the intelligence published by American journals, and we regret to hear that such failures are likely to give a fresh blow to any feeling of returning confidence. We hope business will continue to be conducted here on safe and sound principles, and that there will be no launching out before the course is thoroughly clear, as it would be a great disaster and misfortune to experience any unexpected drawbacks at the beginning of the general resuscitation of trade. Business this week has been very contracted, and buyers cannot do better than continue to exercise the utmost caution during these stormy times. To-day the market has been in a very unsettled state, as might naturally be expected upon the announcement in this morning's Times of the resignation of Lord Derby and Lord Carnarvon, together with the instructions forwarded to the Admiral of the Mediterranean fleet, and the notice given by the Chancellor of the Exchequer that on Monday night, in Committee of Supply, he would move a supplementary estimate for naval and military purposes.

The unnecessary delay on the part of Russia in publishing the terms of peace, and all the while pressing forward her forces towards Gallipoli and Constantinople, have aroused our Government to a proper sense of duty, and forced it to apply to Parliament for the supplementary estimate which was originally anticipated; but as it is the bounden duty of every Government to be always well prepared against eventualities, it had no alternative but to give notice at once of its intention to apply to Parliament to furnish the requisite means to carry out the precautionary measures that had been previously intimated might possibly have to be made. If Parliament declines to grant the vote (should it be pressed), then the responsibility will be shifted from the ministers to the country, and it will have to bear the fatal consequences attending delay. Credit, however, should be given to our ministers for being in possession of information that justifies the demand they are about to make upon the nation, and in questions concerning the safety of the Empire all factions ought to put aside their differences and rally round the Government. If the vote is asked for and refused the ministers will, of course, tender their resignation, and the country will have nobody to fall back upon but a disorganised and divided Liberal party, and this would certainly not impart confidence to our markets, and we fear trade would drag on in a most lifeless manner for a considerable time to come.

COPPER.—There is nothing in this metal on its own merits to lead to the expectation that any permanent improvement in value will soon be effected. The demand for manufactured is very quiet, and easier rates prevail; and as far as India is concerned the fall in the exchange will check fresh orders being given out, unless reduced quotations are accepted. The consumptive demand is also quiet, and for the present fully supplied. Continental advances are still gloomy, and there are but few shipping orders coming forward. The principal support given to our market lately has been of a speculative character, but even that now has partly subsided, and as might be expected the price has somewhat immediately dropped, and the price of Chili bars after having reached 66s. 10s. has since receded to 65s. Buyers generally have no confidence in the stability of prices, and although at times an artificial scarcity may be created, either by holders temporarily withdrawing, or speculators suddenly making a desperate effort to buy up the market, yet it is of no avail; the time has not arrived for a general revival, and sellers must be content either to look on or take a lower price. The latter would seem to be the wisest course under existing circumstances, for neither political nor commercial affairs are of the satisfactory reliable character as to warrant the belief of higher prices; besides, there are certain peculiar features in connection with this metal that render a speculative operation at the present time dangerous, and until the market is relieved, and all injurious influences removed, there will be no certainty about its future course. It is true the price is comparatively moderate, and it is also true that nearly every other commodity is equally

so, therefore the depreciation is not exceptional or excessive compared with the fall in the prices of other metals, and there is nothing specially good in the price whereby to reap a considerable advantage. The fact of the legitimate demand all round remaining so very quiet is a proof that the price offers no inducement to consumers, and may be taken as an argument in favour of lower rates. Before an improved price can be entertained there must be evidence of an improved demand. To imagine that higher prices will excite the demand is absurd; lower prices might do so, but higher rates would only check what little is doing. If the steadiness of the market can be preserved it is as much as sellers can expect, and we would strongly recommend them to postpone any attempt to raise quotations at the present time; let us first of all see that there is something real and substantial to go upon, that the home consumption is favourable, and that foreign markets are improving, that stocks at home and abroad are decreasing, and that the demand is keeping down supplies, and last, but not least, that the peace of Europe is secured upon a firm basis; then, and not till then, will it be time enough to talk about higher prices. Several false starts have already been made, and they have only ended in loss and disappointment; we want no more of them, for they undermine confidence, and leave us more prostrate than before.

IRON.—We are glad to be able to announce from Birmingham that Mr. J. Chamberlain, M.P., the arbitrator of the South Staffordshire Wages Board, has made his award in favour of a reduction in wages. The reduction is to be 7½ per cent., or 9d. per ton for puddling, and to date back from Monday, Jan. 14, 1878, and to be subject to reconsideration by the board at any time on one month's notice being given on behalf of either employers or employees. As to the advisability of an immediate reduction in wages, there could be no two opinions, but the amount of the award, we fear, is too small to effect any good either to the masters or men. The inferior iron have already discounted the reduction, and will not be able to quote any cheaper than before, and as it is known that former prices were not sufficiently low to stimulate the demand, it became necessary that the reduction should have been at least 15 per cent. What we want to see is that our prices are brought below those of any other country, and then our men would obtain increased employment. It is almost useless to put the award at a rate which will not make any favourable impression upon trade, neither the masters or men will benefit much by that decision; however, it is a move in the right direction, and can be altered again in another month, although we would prefer making sensible reduction at once, and to remain a force for a longer period, but whatever changes may be agreed upon it should always be understood that the price not only of list houses, but the whole trade, must rise or fall with the variations in the scale of wages. The object of the men accepting lower wages we presume is primarily to obtain increased work, but that can only be accomplished by lower prices, therefore whenever an announcement of a reduction in wages is made it should carry the equivalent fall in prices. The whole trade ought to be worked under one system; it might be divided into sections if found desirable, but whatever the decision for any particular course it should not be departed from. The main point to keep in view in arbitrating of this kind is not so much what will please either the one side or the other as what are the circumstances in connection with the trade that will afford the most equitable adjustment consistent with the future interests of those concerned. An independent and unprejudiced judgment is seldom appreciated and rarely gives satisfaction to anyone, nevertheless its value is to be estimated by its impartiality and foresight. To falsely flatter the men by telling them they ought to have higher wages, or even to recommend them to hold out for full wages, would produce about the same results as to advise the masters to maintain prices in the face of a diminished demand and declining market. In either case there would be loss instead of gain, and we would rather see the plan of getting full employment, though it be but at slight profits, and the present period is one which demands sacrifices in order to restore trade to its normal condition. There is not only a diminished consumption, but there is an additional competition in foreign production to contend with, and it is more from this latter cause that our trade is suffering, and, therefore, the principal object should be to counteract its influence, but this can only be done by lessening the cost of production. Buyers are, therefore, holding back their orders in hopes of prices becoming easier with the reduction in the men's wage. Transactions which are now carried on are very limited, being merely those most immediate requirements. No noteworthy change is reported in manufactured iron, the market continuing very dull. At Leeds the market is reported very quiet, the forces being anything but busy; strong hopes, however, are entertained that if peace is established in Eastern Europe the trade will soon revive. There has been very little change in the Rotherham district during the past week. Great dullness continues at almost every establishment, the chief business being done in general merchant iron and tyres. The Carlton Iron Company at Middlesbrough have been compelled to blow out one of their furnaces on account of the most depressed condition in which business in the district is languishing. The last quarterly meeting certainly has not stirred up the trade. It would appear that the “quarterly meeting institution” is gradually losing its influence both over business and prices.

Hematite brands are unusually weak, and no one appears to have any hopes of any speedy return to firmness. There remains very little iron undelivered, so masters expect that merchants will have to buy very shortly. The production of Cleveland iron has been decreased 10 per cent. The markets are very quiet at Newcastle, quotations for common bars being from 5s. 12s. 6d. to 6s. 12s. 6d. No improvements show themselves in South Durham as the year advances, but business continues in a most languid and despondent condition. The reports from Barrow are as unfavourable as those from other districts, Bessemer iron being the only iron for which there is any demand worthy of note. The foreign markets have shown very little variation; the Meurthe-et-Moselle Works, in France, have made an attempt to advance the rates current for refining pig. Business is effected at Longwy at 2s. 9s. 6d. per ton and at 2s. 10s. 6d. per ton Nancy. The Scotch pig markets in Glasgow have remained steady, a fair business being done from 50s. 10s. 6d. to 51s. cash, and 51s. to 51s. 15s. one month, the markets now closing at 50s. 9d. cash.

For the week ending Jan. 20, 1877..... Tons 5,141
For the week ending Jan. 19, 1878..... 4,532
Decrease..... 609
Total decrease for 1878..... 2,347
Imports of Middlesbrough pig-iron into Grangemouth:—
For the week ending Jan. 19, 1878..... Tons 3,987
For the week ending Jan. 20, 1877..... 3,991
Increase..... 6
Total decrease for 1878..... 5,990
In blast Jan. 20, 1877..... 108
In blast Jan. 19, 1878..... 87

TIN.—The change that comes over the disposition of operators in this metal is somewhat remarkable. At one time they are so elated that no price seem high enough to meet their exalted views, and at another time they are so awfully depressed that the lowest price reached for the last 50 years completely unnerves them, and causes the greatest apprehension to arise in regard to future prices, and this is the feeling at the present moment, and the reduction in prices this week fully confirms it. The improbability of the last advance is now seen, and the fall is in accordance with our views and predictions, although not to the full extent, and 60s. seems still a likely figure for Straits and Australian before any particular effect can be produced upon supplies. The first quarter of the year will probably show the heaviest shipments, and unfavourable statistics may be looked for, and holders are as unprepared to be as they are against any further fall should realise one, especially as a serious decline might take place in the event of war, for the stock here is very large, and it might become difficult to finance. Margins must be kept up, or realisations will have to be made, and forced sales would weaken the market considerably. Prices, however, have ruled a little steadier to-day.

TIN-PLATES are in limited request, and prices easy, makers being in want of orders. The report from New York states that plates remain very quiet, but prices have a steady support.
LEAD.—This metal has been very dull all the week English pig is quoted down to 18s. 17s. 6d. per ton, while sheet-lead retains its former quotation of 20s. per ton. The advices by the mail from New York on the 12th instant complaints of the very depressed condition in which foreign pigs have fallen, and although the low figure of 4s. 4d. is asked, it appears to be above the views of merchants. Prices remain the same for manufactured, and a fair amount of business is being transacted. There are very few inquiries for refined lead. The imports for the year 1877 were 255,413 pigs, as compared with 154,670 pigs in 1876, or showing an increase of 100,743 pigs.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday evening. The Glasgow market declined this morning 3d. per ton, but recovered this afternoon, and closed at 51s. for g.m.b. We quote makers' No. 1 iron—Gartsherrie, 50s. 3d.; Coltness, 64s.; Calder, 59s.; Langloan, 61s. 6d.; Summerlee, 58s. 6d.; Monkland, 52s. 6d.; f.o.b. Glasgow; Glangarnock, 58s.; Eglington, 53s. 6d.; f.o.b. Leith; Kennel, 54s.; f.o.b. Boness. Our market continues quiet, particularly in orders for the home trade. The English merchants in the foreign trade are moving with the greatest caution; nevertheless, in the midst of the general uncertainty on this side, the merchants have given considerable orders out during the last week, which has been a favourable position to judge of the future prospects of the trade. The annual meeting of the South Staffordshire Ironmasters Association will be held at Birmingham next Thursday.

At the Swansea Ticketing, on Tuesday, 2334 tons of copper ore were sold, realising 8704s. 0s. 6d. The particulars of the sale were—Average standard for 9 per cent. produce, 86s. 18s. 2d.; average produce, 6 5-16; average price per ton, 3s. 14s. 7d.; quantity of fine copper, 147 tons 3 cwt. The following are the particulars of the two last sales:—
Date. Tons. Standard. Produce. Perton. Per unit. Ore copper.
Jan. 1..... 2335..... 238 7 0..... 6 15-16, 43 11 3..... 12s. 0d..... 260 0 0
“ 22..... 2334..... 86 18 2..... 6 5-16, 3 14 7..... 11 10..... 260 1 3

Compared with the last sale, the decline has been in the standard 1s. 9s., and in the price per ton of ore about 4s. 6d. Messrs. Richardson reports that the Betts Cove ore gave a produce of 5½, and sold at 11s. 8d. per unit; Union, produce 5½, per unit 11s. 7d.; Cavenham produce 6½, per unit 11s. 10d. On Feb 5 there will be offered for sale 1912 tons, from Betts Cove, Quebrada, Aljustrel, Berehaven, Carracedo, and Italy.

Stagnation has been the order of the day since our last, not only in the MINING SHARE MARKET but in all others, and in all classes of securities. The general public seem to consider that if we drift into war there will be a considerable and sudden drop in prices all round before things can right themselves. If, on the contrary, an armistice is agreed to then most securities will rise, and business become brisk. But in the state of uncertainty which now exists business is at a stand, for the public hold aloof, and even “bulls” and “bears” know not how to act. Our own belief is that when we know the real course events, now so threatening, are likely to take, even should there be war, the panic which might be expected on such occasion has been already discounted; and after a fall, chiefly in foreign stocks, business, especially for good metal-producing properties, might improve. In the dullness that prevails our quotations are chiefly nominal.

TIN MINES appear completely neglected, and our prices are merely nominal. Carn Brea, 39 to 41; Dolcoath, 30 to 32; Tincroft, 11 to 13; South Condurrow, 9 to 9½; South Frances, 2½ to 3; West Godolphin, 1 to 1½. Wilson's Lode has been cut at the 70, and, as far as seen, it equals expectation; this is considered an important point in the mine. Wheel Agar, 3½ to 4½; Wheel Grenville, 2½ to 3; Wheel Kitty (St. Agnes), 2 to 2½; Wheel Peavor, 6 to 6½.

COPPER MINES remain dull, and there is no change in prices of anything important to report. Devon Great Consols, 3 to 3½; East Caradon, ½ to 1; Hingston Down, ½ to ½; Parys Mountain, 9s. to 10s.; West Tolgus, 74 to 76.

LEAD MINES have not shown much change or any greater activity this week. West Chiverton, 13½ to 14½; at the meeting here a dividend of 10s. per share was declared. The cash account showed an overdraft at the bankers of 3036s. 15s. 6d. The profit and loss account shows a balance of profit of 1678s. 17s. 8d. on four months' working, charging the costs to Nov. 3, and crediting ores sold to December. The statement of assets and liabilities shows an amount due to merchants of 3100s. 12s. 7d.; doctor's fees, 69s. 8s. 6d.; lord's dues, 172s. 4s. 4d.; rent of wharf, 37s. 0s. 8d.; rates and taxes, 119s. 12s. 6d.; overdraft at banker's, 3036s. 15s. 6d.; dividends outstanding, 33s. 10s. 4d. Assets—Sundry debtors, 681s. 13s. 1d.; bills receivable for ore, 691s. 15s. 6d.; December labour cost paid, but not debited, 1349s. 3s. 5d.; petty cash in hand, 105s.; in hands of secretary, 94s. 5s. 5d.; balance of assets, 2579s. 13s. 9d. At East Chiverton meeting a call of 4s. per share was made. The accounts for five months showed a debit balance of 482s.; 10 tons of lead have been sold for 150s.

Roman Gravel, 7½ to 8½; the 95 south is in a lode worth ½ ton of lead per fathom; the 80 south is worth 5 tons per fathom. The month's sale of ore, 180 tons, realised 2122s. 15s. Tankerville has been inquired for at low quotations, and leave off 4½ to 4½. Watson's shaft is down 5½ fathoms below the 192. The 192 east has been driven 12m. 3 ft.; lode worth 1 ton of lead per fathom; the 192 west is worth 1½ to 2 tons per fathom. Great Laxey have been in good request, at 21½ to 22½; North Laxey, 4s. to 6s.; Glenroy, ¾ to 1; Leadhills, 4½ to 4½; Llanrwst, 1½ to 1½; Van, 27 to 29; East Van, 2 to 2½; Great Dylife, 2 to 3; Herodford, 9½ to 10½; Ladywell, ¾ to 1; Pateley Bridge, 2½ to 3½; Rookhope, ¾ to 1; St. Patrick, 1 to 1½; Temple, 2½ to 2½; West Assheton, ¾ to ¾; West Tankerville, ¾ to ¾; Caron (Lead), 2½ to 2½; Wye Valley, 1½ to 2; West Wye Valley, 4 to 4½. Grogwinion, 4½ to 5; a dividend of 2s. per share has been declared on the fully paid-up shares, and 9d. per share on the others.

FOREIGN MINES.—Chontales, 12s. to 14s.; Eberhardt and Aurora, 7 to 7½; Flagstaff, ¾ to 1½; New Quebrada, 2½ to 2½; Port Phillip, ¾ to ¾; Richmond, 8½ to 8½. Hultafall, 5 to 5½; the lode in the 15 end is valued at 5 tons of lead and 5 tons of blende per cubic fathom.

The Market for Mine Shares on the Stock Exchange has remained without material alteration, the improvement looked forward to last week not yet having been realised; mine shares, however, have not been more affected by the present uncertainty. Some interesting figures showing that systematic and judicious investment in mines yield upon the average excellent profits, are contained in the report of the directors of the Victoria (London) Mining Company, prepared for presentation at the forthcoming meeting. The company has not been especially fortunate, and have had to take the up and downs like individual capitalists. They have 300l. in the London and Melbourne Company, in which the workings have not during the past year been attended with success. In July the quartz was temporarily abandoned, and attention turned to the alluvium, and the last accounts are that the wash dirt has been struck, and that there are indications of reaching it in deep ground. The satisfactory progress at South Clunes has been interrupted by a fault in the lode since November, 1876, and the dividends have been seriously interfered with; in this concern the Victoria Company have 6010s. 12s. 5d. invested. As to the other concern in which they are interested—the Prince of Wales—nothing has been done during the year; the Victoria Company have 1867s. 4s. invested in it. The amounts mentioned, with 324s. 5s. 5d. capital in hand, brings up the sum on which interest has to be earned to 8502s. 1s. 10d., and the dividends earned upon this during the year amounted to 1877s. 10s., which is equivalent to a profit on the total amount invested of rather over 23s. 6s. per cent. per annum. Such results speak for themselves, and should suffice to convince capitalists that average results of mining enterprise leave nothing to complain of.

Port Phillip and Colonial, ¾ to ¾; the directors report to be presented at the meeting, on Thursday, states that the balance to credit revenue amounts to 6356s., out of which the directors recommend a dividend of 1s. per share, making 2s., or 10 per cent., on the year. The reserve fund (5368s.) is in Victorian Government 5 per cent. debentures: 10 per cent. on the year's dividend will now be added, which will leave 506s. to carry forward. The special feature of the year's operations is the marked success which has attended the development of the tribute system, which has been extended as far as was found to be practicable, as many as 320 men having been thus employed at the same time, some of whom have made large profits, whilst others have not been able to meet their expenses; but the results to the company are that it is enabled to resume the payment of dividends, to make some addition to its reserve fund, and its future prospects are materially improved.

The observations of the Chairman at the meeting of the Mining Company of Ireland, just held, afford another instance of the disinclination of Irishmen to do anything useful for themselves. Were Irish capitalists to display any reasonable amount of disposition to develop the resources of the country, they would have no difficulty in obtaining such an amount of financial co-operation in England as would render success almost certain. Instead of this it is always the old song, “What are ye going to do for us.” For many years past efforts have been made to construct the Southern Railway of Ireland, the importance of which for assisting the development of a marvellously rich district is known to Irishmen better than anyone else, yet the support received from Ireland has been comparatively insignificant, and Englishmen assuming therefrom that the project is unworthy of active consideration, the company has ever been in financial difficulty. And what does the chairman of the Mining Company of Ireland now say? Much the same as has constantly been said by others who look forward to profit from the construction of the line.—“For cartage from the pit's mouth to the railway station at Thurles, and other depots, they had to pay from 4s. 6d. to 8s. 3d. per ton; and for the cartage of coals from thence to Dublin, 7s. 6d. per ton. Some of their coals had been supplied to one of the largest establishments in Dublin, where it was preferred to the best Welsh anthracite coal. Unfortunately the construction of the line called the Southern Railway, from Thurles to Clonmel, was again stopped, and it was now sought to get a guarantee from the baronies along the main line only, so as to ensure the construction of the main line, letting the branches remain untouched for the present. One of these branches was to run into the colliery, so that discontinuance of the branches was a loss to the company; however, Laffin's Bridge station would be only six miles distant. They had cause to be satisfied when they remembered that half the small collieries in Wales were being closed.” Now, it is precisely such propitiation as the Mining Company of Ireland who should have put their shoulders to the wheel, and if they had gone no farther than constructing one of the small branches and recouping themselves of the money which would otherwise have been paid for cartage, there would have been no difficulty in securing the necessary agreement from the Southern Railway Company, and benefit would have resulted to both concerns. English capitalists wish to know that the Irish proprietors inter-

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are really exerting themselves in the matter, and ample funds will then be forthcoming.

St. John del Rey, 305 to 315; the latest telegram states that the profit for December was 99000. The produce for the first division (eight days) of January was 11,250 oits., of the value of 43866. The yield of the ore being 6.9 oits. per ton. Don Pedro North del Rey, 2 to 3; the clean-up for the first division of January was 2000 oits. The yield of precious metals in the United States during 1877 amounts to an aggregate of \$98,421,754, being an excess of \$7,546,581 over 1876—the greatest previous annual yield in the history of the country. If the Comstock Mines yield as much in 1878 as during 1877 the aggregate product of silver and gold will approximate \$100,000,000. It is stated that the year 1878 promises to be extremely favourable for mining. The bullion yield is expected to exceed that of any previous year. Referring to the early history of the Flagstaff Mine, it appears that in 1871 a little ore was found in what is known as the Flagstaff, and before they fairly comprehended the situation a 20-stamp mill was put up by the owners. Various locations have been made since, but the Bonanza Mine, discovered in 1876, was the next strike that caused anything like excitement. A teamster driving along the road got stalled, and he found his wagon in \$200 ore. The smelt mills of Salt Lake County in 1877 treated 18,465 tons, yielding 1276 lbs. lead, 1,412,484 ozs. silver, and 2241 ozs. gold. The Flagstaff in 1877 produced just about 1200 tons of ore monthly, and the Salt Lake Press says that "Utah mines worked with English capital have been unfortunate in the selection of their agents, but all the bad management which may have attended the development and working of the Flagstaff does not disprove the fact that this mine is one of the greatest properties in Utah."

Richmond, 8½ to 9; the usual weekly telegram from the mines gives the week's run at \$90,000, from 1120 tons of ore. During the week the refinery produced \$60,000. The whole of the committee have now returned to London, and they are busily engaged in the preparation of their report, but from the large mass of matter which they have got together some little time must elapse before it will be ready for presentation to the shareholders; it may, however, be satisfactory to them to know that every member of the committee is thoroughly satisfied with regard to the value and permanency of the property, and that they do not hesitate to believe that their report will be so exhaustive and complete as to give the shareholders the utmost confidence. For some time past they have been accumulating a large stock of refined lead at the mines, but no doubt is entertained as to their being able to find an outside market for it at a price which will leave a good profit to the company, although prices are not so good as they were a twelvemonth since. The local officials appear to have entitled themselves to considerable praise for the energy and judgment they have displayed in the conduct of the company's business, and their services will not have escaped the notice of the committee.

Hultafall, 5 to 5½; from advices received this day the dressing machinery is expected to be completed and at work by the end of February. The operations at the mines are being carried on with great activity, and the points of operation are as last reported, the 15 fm. level being valued at 10 tons of lead and blende in about quantities per cubic fathom. The shaft is down 106 ft.

The Market for Hydraulic or Gold-Washing Shares on the Stock Exchange remains inactive, and prices are quoted without material alteration. Late news from California states that heavy rain has been general throughout the State.—Birdseye Creek: The agent's report states that the property was quite ready for active operations, and better progress had been made in the Waloupa tunnel during December. Blue Tent is at work. Cedar Creek was filled up in readiness for water at date of last advices (Jan. 4).

Lead Mine Shares have been almost entirely neglected, and continued decline in the market for the metal seriously affects profits of dividend mines, and damages the prospects of progressive mines altogether. West Chiverton, 12½ to 14½; at the meeting, on Wednesday, a dividend of 10s. per share was paid, and the credit balance by 1500. The directors are to be congratulated upon the excellent results obtained, in spite of the depressed condition of the metal market; but the proprietor of the celebrated Morrison's pills used to say that the dispensers of orthodox physicians' prescriptions frequently "tossed," and cried "heads, belladonna—tails, prussic acid," in order to determine what drug to give to the unlucky patient; and it seems that the West Chiverton directors have been adopting the same principle with regard to the water difficulty at Hawkes' boiler. They are troubled with a corrosive feed water, which destroys the plates near the water line in about two years, yet the directors (for this is a directors' question, and not one which should be left to a working engineer) have never had the nous to get the water analysed and avoid the destruction, but have left those at the mine to apply any empirical remedy that happened to be thought of, and consequently tan has been, and soda ash is, to be tried as a nostrum. As everything, from "cowdung" to "port wine and cheese rind," has been suggested by practical men to meet the difficulty, it would not be safe to say how long the "practical" tests will go on at West Chiverton, but it may be worth while to suggest that there are scientific chemists—Dr. Paul, Mr. E. Riley, Dr. Philson, and many others whose names are well known to the readers of the Journal—who would analyse the water for 2s. 2d. or 3s. 3d., and give a report which might save the boiler-plates, though it would interfere with the amusing practical experiments.

Van, 27 to 28; the various points of operation are progressing much as usual, and the sinking of Seaham's shaft is being pushed on vigorously. Grogwinion, 4½ to 5, cum div.; at the meeting on Thursday a dividend of 10 per cent. was declared, payable within 21 days. The latest news from the mine is satisfactory, the manager stating that it is looking much better than for a long time past, and what is of even greater importance is that "the lode in depth—that is, below the bed of the river—at which point it has never before been worked upon, is opening out as rich and productive as at any point above—a fact that goes far to prove the longevity of the concern, as it is probable that it will be many years before it becomes necessary to trench upon the hidden reserves of lead that are now proved to exist below the deepest workings in the mine, all of which have hitherto been high and dry above the level of the river." The usual monthly parcel of 100 tons of lead have been sampled, for sale on Thursday next. Wye Valley, 2 to 2½; there has been some enquiry for these shares on the improved appearance of the mine, and the recent discoveries of ore in the deep workings. A parcel of 25 tons of lead and 40 tons of blende has been sampled, for sale on the 31st instant. West Wye Valley, 4 to 4½; good accounts continue to be received regarding this property, and the productiveness of the lode is maintained.

Caron, 2½ to 2¾; the 10 west continues to open out well, and is last reported as being 4 ft. wide and ore throughout, and promising for further discoveries. Surface operations are going on well, and the prospects altogether are very favourable. Red Rock, 2 to 2½ cum div.; good accounts continue to be received respecting the late discovery in the 60 east, which is likely to prove of value. South Cwmystwith, 3½ to 4; the new machinery for dressing is stated to be working well, and the mine to be looking rich at all the principal points. St. Harmon, 2 to 3 cum div.; the operations at this mine are going on well and satisfactorily, and further improvements are reported. Llanidloes, 1 to 1½; a parcel of 15 tons of lead and 50 tons of blende has been sampled for sale on Thursday. Melyndwr, 1 to 1½; an improvement of some importance is reported in this mine.

New Bonfloyd has been inspected by Capt. Francis and Roach, and their reports have been printed for presentation at the meeting on Thursday. Both reports are very encouraging, although there appears to be no merchantable ore in sight except at the 52, east of No. 2 shaft on middle lode, where in the last 3 or 4 fathoms driving they have exposed a course of lead that will yield some 3 tons per fathom. The surface machinery is all in good condition, and working well. Pateley Bridge, 2½ to 3½; the Rake vein, in the 30 east is disordered by a hard piece of rock at present. Same level west unchanged. Other parts of the mine as last reported.

Subjoined are the closing quotations:—
Ashton, ¾ to 1½; Carr Breck, 41 to 43; Devon Great Consols, 3 to 3½; Dolcoath, 31 to 33; East Caradon, ¾ to 1; East Van, 2 to 2½; Glencroy, ¾ to 1; Great Laxey, 21 to 22; Hingston Down Consols, ¾ to 1; Leadhills, 4 to 4½; Marke Valley, ¾ to ¾; Parys Mountain, 8s. to 10s.; Pateley Bridge, 3 to 3½; Penrithall, 8s. to 7s.; Roman Gravel, ¾ to ¾; Rookhope, ¾ to 1; Tankerville, 4 to 4½; Temple, 2½ to 2¾; Tincroft, 11 to 13; Tyn-y-Fron, 1½ to 2; Van, 27 to 28; West Ashton, ¾ to 1; West Chiverton, 12 to 14; West Pateley, 2 to 2½; West Tankerville, ¾ to ¾; Wheal Crebor, ¾ to 1; Grogwinion, 2½ to 3; Almaden and Tiritio, ¾ to ¾; Argentine, 1 to 2; Birdseye Creek, 8½ to 9; Blue Tent, 3 to 3½; Cape Copper, 81 to 83; Cedar Creek, ¾ to ¾; Chontales, ¾ to ¾; Colorado Terrible, 1½ to 2; Condes de Chilli, 1 to 2; Don

Pedro, ¾ to ¾; Eberhardt and Aurora, 6½ to 7½; Exchequer, 1-16ths to 3-16ths; Flagstaff, ¾ to 1; Frontino and Bolivia, 2½ to 2¾; Hultafall, 5 to 5½; I.X.L., ¾ to ¾; Kapanga, ¾ to 1½; Last Chance, ¾ to ¾; New Quebrada, 2 to 2½; Oregon Preference, 4 to 4½; Pumas Eureka, 2½ to 3; Port Phillip, ¾ to ¾; Richmond Consolidated, 8½ to 8¾; St. John del Rey, 305 to 315; Sierra Buttes, 1½ to 1¾; United Mexican, 2½ to 2¾.

ALMADA and TIRITO.—The telegram received on Monday from Mr. Beach states:—"Docile ore discovered driving to the south of slide in Tiritio; looking well." We regret that want of space prevented our inserting the report as to these mines to Dec. 6 in last week's Journal. It will be found in that of this week. The above telegram as to docile ore having been discovered south of the south slide at Tiritio (at the Tunnel level), and stating that the prospects are good, is most important. The discovery is in virgin ground to the surface, and can be worked to a depth of 100 fms. from surface, by continuing ends already driven to the boundary at the Tunnel level—and the 10, 20, 32, 42, and 54 fm. levels below Tunnel. The docile ore is reduced by amalgamation, and is always accompanied in these mines by a percentage of rich petangue ore.

The HOME MINE SHARE MARKETS have been for a long period greatly depressed with almost every other branch of industry, but when this unfortunate Eastern Question is settled we may hope for a great rebound in the prices of shares of almost all the leading home mines. The prices of metals are now at the lowest, but a good demand for lead, and copper more especially, is likely soon to take place.

SOUTH ROMAN GRAVELS.—This mine has been again specially inspected by Capt. Arthur Waters, and he reports that he considers the mine is now proved to be worthless. "The geology of the mine is identical, but the local conditions are not analogous to those in neighbouring successful mines. The company have given the mine all the trial necessary to satisfy any practical miner acquainted with the district."

ROOKHOPE.—Mr. Blenkiron reports that everything is being done to put the dressing-floors into the best position at least cost, and a new dresser, recommended by the Landore Lead Company, has been appointed. He says the mine was never in a better position for sending out the ore, and that large reserves are broken. Next month he hopes to begin increasing the returns.

LLANRWST.—It is stated that a favourable statement of accounts will be shown at the meeting shortly to be held, congratulatory to the shareholders on its success and financial position. The third sale of ore (50 tons) is ready for the market, and over 20000. worth still remains at the surface in course of dressing, besides there are 37,0000. worth of ore discovered below. The plant, buildings, and machinery are valued at about 60000. there is 12000. at the bank, in addition to the unallotted shares. The facts substantiate the promoters' belief in the value and importance of the property. In conclusion, the shareholders may be congratulated upon having held their shares firm; they are considered to have been right, and the sequel will, it is said, prove the dividends they will receive, the large, continuous, and increased profits they will make, they will soon be recouped the purchase-money in this investment, and further prove that this is one of the most valuable investments they have ever made.

Mr. ASHMEAD, of 62, Cornhill, writes that his Statistical Table of the Dividend Mines of 1877 would have been sent us a fortnight back but for one or two companies to whom he applied for information not having supplied it. The rest of the companies sent him the information asked with the promptness and courtesy of former years.

TO CAPITALISTS, SOLICITORS, AND OTHERS.

THE ADVERTISER is desirous of meeting with Gentlemen willing to co-operate with him in the WORKING OF SLATE QUARRIES of great value. The full particulars will be given, and every facility for investigation afforded. The present offers an opportunity seldom met with for the profitable investment of capital, combined with safety. For facility of working it is proposed to form a Limited Liability Company.

Address, "T. H. F.," care of W. H. Smith and Son, Great Western Railway Station, Bath.

TO MINE AGENTS.

WANTED IMMEDIATELY, an AGENT TO TAKE THE ENTIRE MANAGEMENT OF THE SOUTH DARREN SILVER-LEAD AND COPPER MINE, in CARDIGANSHIRE. Must have had considerable practical experience of Mining in that district.

Address, with copies only of testimonials, and stating salary required, to J. H. MURCHISON, Esq., 5, Austin Friars, London.

WANTED.—MINING AGENT.—One who has been a Mine Agent in NORWAY, for several years DESIRES a SITUATION in the same capacity and country.

Address, "P. A.," 12, Goldington Crescent, St. Pancras, London.

WANTED.—A CORNISHMAN, at present Resident Manager of a large COPPER MINING and SMELTING ESTABLISHMENT, will be OPEN to a RE-ENGAGEMENT in December. Speaks and writes French and German, and has some knowledge of Spanish. Unexceptionable references.

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WANTED, TO PURCHASE, FIFTY SHARES IN THE DOMINION OF CANADA PLUMBAGO COMPANY (LIMITED). State lowest price to "Box 340," Post Office, Hull.

WANTED, the ADDRESS OF DEALERS IN MINING SHARES on the LONDON STOCK EXCHANGE. No outsider or advertiser's application entitles to consideration.

Address, "M. R. C.," Palatine Hotel, Manchester.

WANTED, the NAMES AND ADDRESSES of a LARGE NUMBER of BONA FIDE INVESTORS in MINES, RAILWAYS, and other SECURITIES. Must be residents in English inland places only. Midland Counties preferred.

State lowest terms to "Liverpool," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

TO SPANISH MINING COMPANIES, AND OTHERS.—THE ADVERTISER, who is well acquainted with the Spanish language and people, and being a thorough Mining Accountant, as well as Practical Miner and Mineralogist, OFFERS HIS SERVICES to balance and take out the accounts, and make reports upon or visit mines.

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MINES OF EVERY DESCRIPTION, AT HOME AND ABROAD, CAREFULLY INSPECTED and VALUED.

Address, MARSHALL and Co., St. Antholin's Chambers, 26, Budge-row, Cannon-street, London, E.C.

TO BE LET, A LEAD MINE.—A STRONG LODE. Best specimen I have seen in Somerset. £300 to be paid down.

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THE PORT PHILLIP AND COLONIAL GOLD MINING COMPANY (LIMITED). Incorporated by Royal Charter, and under the Companies Acts of 1862 and 1867.

Notice is hereby given, that the ORDINARY GENERAL MEETING of the Shareholders of this company will be HELD at the Cannon-street Terminus Hotel, Cannon-street, in the City of London, on THURSDAY, the 31st January, at Twelve o'clock precisely, in pursuance of the Deed of Settlement, to receive the directors' report and the accounts, declare a dividend, re-elect retiring officers, and to transact such other business as may be necessary.

By Order, J. W. PURCHASE, Secretary.
Offices: 57, Moorgate-street, London, E.C., 10th January, 1878.
N.B.—The Transfer Books of the company will be closed from Wednesday, the 30th January, until Wednesday, the 13th February next, both days inclusive.

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Exhibition Prize Medal—New South Wales, 1877.

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Having recently succeeded in REFINING the AUSTRALIAN TIN to the HIGHEST PITCH OF PURITY, the Undersigned is prepared to SUPPLY an article equal to the BEST REFINED ENGLISH.

The uniform assay of the "Kangaroo" brand ranges from 99.70 to 99.90 pure tin. An exhaustive comparative trial of various brands of Australian tin (see annexed report) have proved the

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To be superior to all other Australian tin, and equal to best refined English.

COPY OF REPORT.

"Sydney Galvanising Works, Sydney, Oct. 1, 1875."
"DEAR SIR,—I have much pleasure in stating that I have found the tin smelted at the 'Kangaroo' Tin Smelting Works superior to any other Australian smelted tin I have used in my business up to the present time, and in no way inferior but quite equal to the celebrated 'Lamb and Flag' tin."

This opinion has been arrived at after several carefully executed practical tests, as well as from metallurgical assays.

"I am, dear Sir, yours faithfully, S. L. BENSUSAN."

Messrs. JOHNSON, MATTHEY, AND CO., the well-known

Assayers, report on 24th December, 1875, on a shipment ex Durham, 25 tons

of "KANGAROO" TIN, 99.95 per cent. pure tin.

In ordering the "Kangaroo" brand the trade will henceforth ensure uniformity of quality, excellence of texture, and absolute freedom from impurity

"KANGAROO" TIN SMELTING WORKS.

Sydney, September, 1877. S. L. BENSUSAN.

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PROPRIETORS of MINES and HOLDERS of ABOVE may SEND SAMPLES, stating contents of BARYTA and LIME, with prices, &c., to—

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SULPHATE OF BARYTA.

AN OPENING IN TENNESSEE, U.S.A., for a Man thoroughly acquainted with the GRINDING and MANUFACTURE of SULPHATE OF BARYTA in all its details.

Apply, stating age, salary, and experience, to the Secretary, Southern States Coal, Iron, and Land Company (Limited), Stockton-on-Tees.

FOR SALE, the WHOLE or PART:—
200 CAMBRIAN (Lead) £ 2 5 0 200 TYN-Y-FRON £ 1 12 6
25 GORSEDD & MERLLE 5 0 0 200 PARYS MOUNTAIN 0 0 0
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MR. GEORGE BUDGE, STOCK AND SHARE DEALER, begs to inform his clients that he has REMOVED his BUSINESS from 4, Royal Exchange Buildings, to—

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Mr. Budge has dealings either as Buyer or Seller, at close net prices, in Caron, Van, Roman Gravel, Tankerville, West Wye Valley, Great Laxey, Grogwinion, Lisburne, Devon Great Consols, Marke Valley, Wye Valley, Bedford United, Exchequer, Richmond, Frontino, South Aurora, Last Chance, Red Rock, Flagstaff, Eberhardt, South Cwmystwith, Chontales, and South Frances.

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This very promising mine is situated near to the Lisburne and Grogwinion Mines, and contains parallel lodes thereto. All the capital is subscribed, and the works are in full operation. Sales of lead will commence directly the new dressing machinery is completed. These shares are strongly recommended for an early rise in price. Present quotation, 2¼ to 2½, at which Mr. Budge is prepared to deal. Full particulars on application.

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This property has commenced to make regular returns of lead: 50 tons have already been sold at £12 per ton, and a parcel will in future be sold every month.

The shares are worth attention. Price £4 to £4½, having risen 10s. since my last recommendation.

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Edited and published by—

ALFRED E. COOKE, 74, OLD BROAD STREET, LONDON.

Notices to Correspondents.

* * Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be sent on receipt; it then forms an accumulating useful work of reference.

ROCK-BORING MACHINERY.—One or two printer's errors occur in the paper, in last week's Journal, on "Rock-Boring Machinery." Under the head of Shaft Sinking Stand for engagements, read "arrangements." In the last paragraph but one I am made to say the contract price is 13s. 10s. per fathom, it should be "13s."—J. BARKELL.

Received.—"P. E. G." (New York, Jan. 1).—"Constant Reader" (Norwich).—"R. G." (Newcastle-on-Tyne).—"A. T." (Chester).—"G. S. K."—"H. P." (Manchester).—"R. L. R."—"Shareholder" (North Laxey).—"Shareholder" (Wheat Grenville).—"Constant Reader" (Bristol).—"L. R."—"We could not publish such a letter: send a copy to the directors."—"Shareholder" (Prince of Wales).—"Amanuensis."—"Shareholder" (West Seton).—"J. M. B." (San Juan Mines).—"Next week."—"Devon" (Mining in North Devon).—"Next week."—"Shareholder" (Flagstaff).—"Shareholder" (East Lovell).

THE SUPPLEMENTARY SHEET.—We have received occasional complaints, and of late a good many, that the Journal is delivered by country booksellers without the Supplement. Subscribers would oblige us by demanding that the paper should be handed to them complete, as every Journal is accompanied by the Supplement when it leaves our office, and the fault of omission must rest with the country bookseller or their London agent.

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, JANUARY 26, 1878.

COLLIERY EXPLOSIONS, AND COLLIERY MANAGEMENT.

In a few days, we are informed, Mr. MACDONALD will bring under the notice of the House of Commons the subject of the ventilation of mines, and will ask for a day to be named for its discussion, in order to express his strong dissatisfaction with the present system, which, in his opinion, has led to the loss of thousands of lives through carelessness on the part of coalowners and managers. The views entertained by the Member for Stafford are certainly not at all in accordance with those of our ablest mining engineers as to colliery management and ventilation, the difference being such as might be expected to exist between a very ordinary and by no means intelligent collier and an able practical and educated expert. Of this we are reminded by Mr. JAMES WILSON, the well-known chief mining manager of the Oaks Colliery, who has favoured us with some interesting notes with respect to explosions, with which he has been more than ordinarily familiar, as well as to colliery management as it is at the present time. During his long experience in no case has he found either owner or manager ever showing a disposition to save a penny by which either life or property could be risked. Great changes, however, have taken place within the last half-century with respect to mining. Thirty years ago, we are told, it was considered a large pit that sent out daily from 150 to 200 tons of coal by means of from 100 to 200 men, with a ventilation of from 14,000 to 30,000 cubic feet of air per minute, the workings not being driven out to anything like the extent they are now. But at the present day it is no uncommon thing to find in one pit from 300 to 400 men and boys, with a ventilation of from 150,000 to 200,000 cubic feet of air per minute, and a daily output of 1000 tons of coal. In some of these pits there are 50 or 60 miles of roadway open, with 400 or 500 acres of goaf worked out. This in itself shows that mining management has made considerable headway.

By many persons serious colliery explosions have been considered of comparatively recent date; but this is not really the case, for we find that so far back as the year 1767 they were of rather frequent occurrence in the Newcastle district, two having taken place within six days, 39 persons having been killed at one pit. Since that period great changes have taken place with respect to ventilation, and marked progress has been made in scientific mining education, but by the extensions in the workings new dangers have arisen, the cause of which was formerly unknown. It is certainly not a very difficult matter to ventilate mines under ordinary circumstances, and carry off the gases as they escape from the fissures of the coal, the floor or the old roadways, or in the case of blowers, which at times burst out from the coal when the men are cutting towards a pocket of gas, or where some is stored in the coal. Some of these outbursts come at times with all the force of a high pressure engine, and they have been known to continue blowing for months. But still there is a great deal of difference between what is known as a "blower" and an outburst of gas, as the latter comes very suddenly, sometimes lifting many hundreds of tons of the floor, filling the roadways for hundreds of yards, even as far as the pit bottom by way of the "returns" in a current of (say) 150,000 cubic feet of air per minute, and continuing so for hours. So sudden are some of these outbursts that in the space of five minutes they have been known to fill the banks and roadways with gas for a distance of upwards of three-quarters of a mile, so that the ventilation was powerless. In the course of six hours the gas given off by one of these discharges was found to amount to 5,644,600 cubic feet. To make that quantity of gas explosive it would have to be mixed with something like 33,687,600 cubic feet of air, and to render it harmless would require about 56,446,000 cubic feet. Here there is a hidden source of danger that comes like a clap of thunder which it is impossible to provide against, but makes the use of the best safety-lamp most invaluable. Yet it is assumed that accidents from these outbursts are preventable, and managers and colliery owners are blamed for explosions which there is very little doubt are caused in not a few instances by a sudden outpour of gas from the floor of a mine. That some of the most calamitous of our colliery explosions have been the result of such discharges as we have just been alluding to is the opinion of very many of our best mining engineers, and we cannot see how any Act of Parliament can be framed by Mr. MACDONALD, or anyone else, for preventing the sudden eruption of gas from a mine. Nor yet can we see how any change can take place in the present system of working coal, or how ventilation can be materially improved.

It is evident that in getting down to great depths in mines we must expect to find great changes from comparatively surface workings, owing to the pressure. When a certain quantity of coal is worked out the roof must rest on something. If we take a bank face (say) 100 yards in length, the depth from the surface 400 yards, and the breadth of the coal worked out 30 yards, then on each yard of space there will be a weight of 540 tons resting. Should this space have fallen to a limited extent, which is usually the case in opening out a new district, then we should have the enormous weight of 2,700,000 tons of strata supported by the edges of the coal surrounding a limited goaf of little more than an acre, or if 5 yards were allowed for the pressure extending to each side and the ends, this would give an extra pressure of 864,000 tons resting on the surrounding coal, or a total of 3,564,000 tons on the portion of coal around the goaf. Now, we know that when there is a vast fall under the circumstances just narrated, and where the pressure is very great, the probability is that a good deal of gas will be set free, but with respect to sudden outbursts, where there is a continuous discharge, for the clearing away of which no amount of ventilation can be obtained, the actual cause is by no means clear. Can it be possible that such vast quantities of gas have been standing (say) in the space of 1 acre, or in 100 yards by 50, containing in every foot of thickness 45,000 cubic feet of gas, as has been found to be given off at some places? If we assume that a space of 45,000 feet is filled with fire-damp, and a sudden settling of the roof takes place, it would force the gas out on the bank face, roadways, and on the miners; and if, in addition to this, there was a space or spaces in the floor, containing fire-damp of six times the ordinary atmosphere density suddenly compressed and forced out, they might have an addition (say) of 135,000 cubic feet. All this being forced into the workings, there would be a quantity of pure fire-

damp sufficient to render explosive 1,800,000 cubic feet of space, which would render a passage of the area of 30 square feet explosive for a distance of 20,000 yards, or upwards of 11 miles. Such an enormous quantity of gas certainly appears to be fully sufficient to account for the most devastating explosion that has ever taken place, and clearly demonstrates that no possible amount of air that could be conveyed into the workings of a colliery would be sufficient to render harmless by dilution accumulations of fire-damp that at times will burst out.

This will be more particularly the case where the great pressure on coal being removed allows the floor to lift, so that the gas beneath will expand, and acquiring force will burst through. That this takes place to a serious extent is well known, for at a colliery in Derbyshire the floor of the bank face, a thousand yards in length, was lifted up to such an extent that no one could put his hand between the roof and the floor. The bank face was over 6 ft. high, and that had been filled up by the lifting of the floor. In another instance where the gas came from the floor a hole was bored, and the gas came off for nearly 70 hours before it ceased. Here we have a most insidious and hidden enemy, who darts out with lightning-like rapidity, and which, it is the belief of many eminent engineers, has been the cause of some of the explosions in South Yorkshire and other places that have never been satisfactorily accounted for. The best ventilation that can be obtained cannot prevent their occurrence, and the serious consequences that no doubt will result from them, so legislation is to be invoked for the purpose of endeavouring to effect what the most eminent scientists and mining engineers have admitted they are powerless to accomplish.

As a rule, the use of gunpowder has been abolished in the working of mines where fire-damp is known to be given off to any serious extent, and if the Act of 1872 is carried out as to the mode by which powder is to be used there should be no apprehension of danger, and the same remark equally applies to propping. The Act has dealt anything but easily with colliery owners and colliery managers, for some of the provisions place them in a position such as is unknown to any other body. Not only so, but it has led to a great increase in the cost of getting coal, some portion of which certainly falls to the public lot. It may be that one or two managers have not been so vigilant as they should have been, or have delegated functions that belonged to their own position to subordinates, but that is no reason for the condemnation of a body of men who, taken altogether, know their responsibilities and perform their onerous duties in a truly praiseworthy manner. But the Member for Stafford appears to take some delight in annoying all those connected with collieries who are not in the actual position of working men, while he also holds peculiar views with respect not only as regards the duties of managers but of the Government Inspectors as well. Legislation with respect to mining has undoubtedly gone far enough, and colliery owners and colliery officials sufficiently annoyed and harassed by the last Act of Parliament, which does as much as is possible to ensure the lives of our miners. What now is required is concerted action on the part of masters and workmen for the purpose of improving the state of the coal trade. Any support given in that direction by Mr. MACDONALD we feel sure will be appreciated by those it has been almost the business of his life to denounce as tyrants, and the enemies of those for whom they have found employment, often to their own loss.

PRODUCTION OF STEEL.

Great as was the depression during last year with respect to those industries in which iron and ironstone play the most important parts it is a noteworthy fact that there was an unusually large production of steel, more particularly for railway purposes, as compared with former years. It may be said that steel is fast superseding iron in the manufacture of goods of a varied character in which not so long since the latter was solely employed. Boilers, ship-plates, axles, tyres, wheels, &c., at one time entirely confined to the ordinary iron mills and forges, are now to a considerable extent made of steel, which from its greater durability, and the low price at which it can be produced, is admitted to be the cheapest in the long run. In making steel, however, there is a certain description of ironstone required, of which it appears that in this country there is not at the present time a sufficient quantity raised to meet our requirements. In previous years our imports of that particular quality of ore necessary for making steel has been of a very limited character, but the returns for 1877 show an immense increase over those of 1876. This, too, has been in addition to a considerable increase in the tonnage raised at home in the principal fields we have—that is, Cumberland, Lancashire, Gloucestershire, South Wales, and Ireland. Our gross output in the kingdom may be fairly estimated at 2,740,000 tons of brown and spathose hematite for 1877. This tonnage, large as it was, did not meet the requirements of makers of steel by a long way, for whilst in 1876 there was imported from Spain and other countries 675,190 tons, in 1877 it was no less than 1,140,434 tons, being certainly by far the largest tonnage ever sent to this country from abroad. An increase in our imports of 475,244 tons during last year will represent an additional output of crude steel-iron of something like 250,000 tons.

That the manufacture of steel rails will go on increasing there is not the slightest doubt, for they are fast replacing the iron ones put down on home and foreign railways some years since. As to our exports, we find that whilst in 1876 we sent abroad 173,754 tons, and in 1877 no less than 234,481 tons, the value of the ironstone imported is put down at 22s. per ton, which appears to us to be a serious charge when compared with what it can be purchased for at home, and we are, therefore, of opinion that greater attention should be paid to our own fields than has hitherto been the case. In many parts of the kingdom there are vast fields which only want developing, and so ensure an increased supply of ore well adapted for the making of the best steel. In the Barrow-in-Furness district we understand that some recent discoveries have been made that will be taken in hand by the Barrow Hematite Company, and there is, as we have said before, other localities where ironstone can be raised if it is only looked for. We, therefore, hope that those interested will take the matter in hand, so as to secure cheap hematite, and by so doing maintain our superiority as the greatest makers of steel, and able to maintain our own against all comers in that rapidly increasing branch of business.

OUR GREAT RAILWAYS.

An analysis of the half-yearly reports of some of the great railway companies shows that British railway property is benefiting sensibly by the reduction which has for some time past been taking place in the price of coal and iron, as well as from the fall in wages. For instance, upon the London, Brighton, and South Coast Railway more train miles were run in the half-year ending Dec. 31, 1877, than in the half-year ending Dec. 31, 1876, and yet it cost less to attain this result. Let this should appear a random statement we will reproduce the official figures upon the subject. The cost of locomotive power upon the system in the second half of 1877 was 125,633s., while in the second half of 1876 it was 127,732s., showing a saving during the past six months of 2099s. Yet, notwithstanding the diminished expenditure made in the company's locomotive department in the second half of last year, we find that in the same period the aggregate distance run by trains was 3,383,186 miles, as compared with 3,176,788 miles in the corresponding six months of 1876. The London, Brighton, and South Coast obtains its supplies of coal under some disadvantages; but, nevertheless, the company is saving money under this head, since the cost of the coal and coke consumed in the locomotive department in the second half of 1877 was 45,188s., while in the second half of 1876 the corresponding cost was 47,776s.

The Manchester, Sheffield, and Lincolnshire is more favourably situated as regards its coal supplies, and it accordingly is enabled to do more work than the London, Brighton, and South Coast with a much smaller outlay for coal and coke. In the half-year ending December 31, 1877, the aggregate distance run by trains upon the Manchester, Sheffield, and Lincolnshire was 4,009,730 miles, as compared with 3,805,297 miles in the corresponding period of 1876.

The cost of the coal and coke consumed in the locomotive department of the Manchester, Sheffield, and Lincolnshire in the second half of 1877 did not exceed 29,716s., while in the second half of 1876 it stood at 33,617s. While the London, Brighton, and South Coast ran 206,398 additional train miles in the second half of 1877 with a saving of 2588s. in the locomotive expenditure for coal and coke, the Manchester, Sheffield, and Lincolnshire ran 795,433 miles more, with a corresponding saving of 3901s. It may, perhaps, be well to remark that the engines of the London, Brighton, and South Coast do, upon the whole, a different class of work to that performed on the Manchester, Sheffield, and Lincolnshire. Thus while the passenger trains of the Manchester, Sheffield, and Lincolnshire in the second half of 1877 ran 1,793,433 miles, and the goods and mineral trains 2,207,297 miles, the London, Brighton, and South Coast passenger trains ran 2,811,532 miles, and the goods and mineral trains only 571,654 miles.

The fortunes of both the Manchester, Sheffield, and Lincolnshire and the London, Brighton, and South Coast appear to be reviving. The dividend declared on the ordinary stock of the Manchester, Sheffield, and Lincolnshire for the past half-year is at the substantial rate of 4½ per cent. per annum. So high a dividend has not been paid upon the stock at any time for the last ten years; and although the ordinary stock still receives only 2½ per cent. per annum for the whole of 1877 the concern is certainly growing in importance and productivity. In past years the Grimsby Docks have been a sad incubus upon the undertaking, but since 1870 the business of these docks has so extended that the company has been induced during the past twelve months to proceed with some extensions to meet the growing trade of the port. The export coal trade of Grimsby has exhibited, however, some flatness during the past half-year, the shipments of coal from the port in that period having been only 198,700 tons, as compared with 234,577 tons in the corresponding half of 1876. The total of 198,700 tons was made up thus:—Shipments coastwise, 14,291 tons; ditto foreign, 184,409 tons. In the last half of 1876 the shipments coastwise were 11,173 tons, while the shipments foreign were 223,404 tons. As for the improvement which has taken place in the London, Brighton, and South Coast, it will suffice to make one single comparison. In 1877 the company was not able to pay any dividend upon its ordinary stock; for 1877 the same stock receives 5½ per cent.

THE HOME FARM COLLIERY INUNDATION.

The report upon Mr. Dickinson's open enquiry upon this accident ordered by the Home Secretary, in reply to the petition of the Wishaw meeting, has just been issued. The Court held by Mr. Dickinson appears to have been well attended as soon as it was known that, against Scotch practice, the witnesses and their friends would be permitted to be present. Mr. Dykes, the fiscal, although he considered he had made a proper investigation, rendered every assistance, even allowing the preognitions to be read, but as these are usually regarded as confidential, Mr. Dickinson read no preognition without the expressed consent of the preognised person. The original investigations appear to have been carefully made in full Scotch form, and the report of Mr. Ralph Moore, the Government Inspector for the district, was made, and the first set of preognitions taken before the Wishaw meeting of April 27. Mr. Dickinson remarks that had they been made public, as would have occurred in the case of a Coroner's inquest in England, possibly no dissatisfaction might have arisen. The evidence contained in the preognitions is such as would have sufficed at any ordinary inquest; but whether the second and third set of preognitions were consequent upon the resolutions passed at the meeting, or would have been taken in the ordinary course of procedure, does not appear. It is due to the Judicature of Scotland to say with reference to the expression of opinion at the public meeting on April 27, in favour of an open enquiry, as by inquest in England, instead of privately by a fiscal, as in Scotland, no inquest could up to the present time have been opened, in consequence of there being no body for the inquest to sit upon.

As to the management, Mr. Dickinson reports that until the occurrence in question the management appears to have possessed the confidence of the miners. The official abstract of the Act and the special rules were duly posted up. The fireman went his round in the mornings, and left his mark to show that he had been there, and ordinary routine was attended to. Mr. Kirkwood, the managing owner, was the certificated manager. He is a thorough practical miner of 35 years' experience, and was spoken of in high terms. John Mair, the assistant manager, or overseer, was 59 years of age, and had been employed underground for 50 years, during 23 years of which he had charge, and was a person of very considerable experience. He was down the pit nearly every day. William Simpson, the fireman, is 32 years of age. He had been in this colliery nearly seven years, during nearly four years of which he acted as fireman, fully three of them being in the ell coal seam, where the inundation occurred. He was in the habit of inspecting the pit every working day. Mr. Moore, her Majesty's Inspector of Mines of the district, said that the company's pits were well managed, and that no expense was spared to make things safe.

The Act appears to have been complied with as regards the double outlet, although, as Mr. Dickinson remarks, no loss of life occurred in connection with the double outlet, nor was the cause of introducing the subject apparent. The shorthand writer's transcript fills 606 pages of foolscap, but one paragraph of Mr. Dickinson's report gives a good idea of the whole. He says that apparently all concerned knew what was going on. It was an occurrence upon which no infallible conclusion could be arrived. Some risk has to be run in earning a livelihood in mines. That risk should be reduced to a minimum, but to arbitrarily stop persons from working when they have as much opportunity as others of forming a judgment upon the question would be harsh.

The talent and common-sense shown by some of the miners in this inquiry were of a high order; yet all alike, except one man who left and another doubtful one, masters and men, including even the surveyors, went on with their work as usual. The men might have availed themselves of their own power of inspection, or of calling in the inspector, but they did neither. The risk proved to have been underrated. He is, therefore, inclined to think that although the result is very sad, each person accepted the circumstances, and should bear his own share of the consequence.

COLLIERY MANAGERS' CERTIFICATES.—The following are the names of the successful candidates at the examination for colliery managers' certificates of competency held on Dec. 13, 14, and 15 at Manchester, for the district of North and East Lancashire and Ireland (Mr. Joseph Dickinson's district):—

James Grundy, 106, Woodhouse-lane, Wigan.
Patrick Mehers, Blackrod.
Benjamin E. Jones, Bickerstaffe Collieries, Ormskirk.
H. G. Foster, Bickerstaffe Collieries, Ormskirk.
John Greenwood, Cliviger Collieries, Burnley.
Robert Wild, Cliviger Collieries, Burnley.
Edward Alderson, Barcroft, Burnley.
J. T. Arrandale, Bradford Colliery, Manchester.
J. E. Fletcher, Crook, near Durham.
Joseph Goodwin, Denton, near Manchester.
George J. Binns, Chesterfield.
John Burgess, Ashton, near Wigan.
Thomas R. Stopford, Rose Bridge Collieries, Wigan.
E. Butler, Heckmondwite.
Joseph Marsh, Westhoughton.
J. P. Harper, Derby.
Joseph Wainwright, Newcastle-under-Lyme.
Charles Bailey, Leigh, Lancashire.
W. Barker, Mirfield, Yorkshire.
Geo. Wm. Elliot, Chowbent.
John Greenwood, jun., Eccles.
Gathorne Bland, Baxenden, near Accrington.
Wm. Wallwork, Clifton, near Manchester.
Thomas Smith, Ashton, near Wigan.

Sixty candidates presented themselves for examination, and of the

the above 24 passed. The examiners were Mr. John Waddington, Barnley; Mr. John Ridyard, Walkden, near Bolton; and Mr. Herbert Fletcher, Ladyshaw Colliery, near Bolton.

THE EXPLOSIVE SUBSTANCES ACT.—In the Whitehaven Police Court, on Thursday, the magistrates' clerk said that a question of considerable importance had arisen, affecting the owners of licences under the Explosive Substances Act, 1875. The 18th section provides that licences can be renewed by local authorities, and that they last for another year. A difficulty had arisen with reference to this renewing, and he had written to the Home Secretary on the subject. The reply was to the effect that if persons who hold licences do not get them renewed before the end of 12 months they will be put to the trouble and expense of making fresh applications for new licences.

EXPLOSIONS IN COAL MINES.—A course of three lectures, on "Explosions in Coal Mines," will be delivered before the Society of Arts by Mr. T. Willis, F.C.S., on Monday next and the two following Monday evenings. The subjects dealt with in the lectures will include, amongst others, the ventilation of mines, the occurrence of fire-damp or marsh-gas in mines, the nature and properties of fire-damp, after-damp or choke-damp, appliances for lighting mines, connection of the variations of atmospheric pressure with explosions in coal mines, dangers attending blasting operations in coal mines, action of coal-dust in certain classes of explosions, the use of the safety-lamp as an indicator of the presence of fire-damp, also as a means for its quantitative estimation.

COAL AND IRON IN THE UNITED STATES.—The market for steel rails has been firm at Philadelphia; the prices asked are a shade higher, and sales have been made of a few small lots at medium figures. The Pennsylvania Railroad Company has ordered an additional lot of 10,000 tons of steel rails. The Pennsylvania steel rail mills appear to have secured as much business as they care for at present at the prices recently prevailing; there is little anxiety shown by either buyer or seller, and a steady and firm market seems assured for the next few weeks. The current quotation for steel rails at Philadelphia is \$41 to \$42 per ton currency at the mills. There has been a little more doing in iron rails at Philadelphia during the past few days, but sales have been confined principally to small lots. Prices have shown some firmness, and it is not likely that orders could now be placed at the very low figures current some time since. Old rails have shown some firmness at Philadelphia. Business in plate and tank iron has been rather quiet at Philadelphia since the opening of the year, but prices are unchanged. The New Year has opened with a quiet but steady feeling in the Pennsylvania pig-iron trade. Orders are stated to be pending at New York for some large lots of steel rails. The market for Scotch pig-iron has been dull and lifeless at New York. The aggregate production of anthracite and bituminous coal in Pennsylvania last year is returned at 24,134,648 tons, against 22,255,050 tons in 1876, showing an increase of 1,879,598 tons last year.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Jan. 24.—The demand experienced by the colliery owners is not smaller than a week ago, nor is it, on the other hand, larger. No difficulty is found in meeting the wants of consumers, either of furnace or forge coal; indeed, much more fuel than is now being raised might be sent into the market without any inconvenience. The prices at which alone a trade can be secured are very unsatisfactory, considering the dead weight charges incurred by the eight-hours system. Although 9s. per ton for furnace and 7s. 6d. to 8s. for forge sorts are the standard rates, yet the bulk of business has to be done at considerably within these figures. The Pig-Iron Trade remains dull. The weight of native pig consumed in South Staffordshire was hardly ever less than it is now. The 44 or 45 furnaces blowing produce more than enough to satisfy users. Orders for finished iron have lately been mostly withheld, pending a definite settlement of the wages question. Now, however, that Mr. Chamberlain has given his award it is likely that business will be freely resumed, buyers taking care to secure easier terms. Representative ironmasters and men fully discussed the wages question before Mr. J. Chamberlain, M.P., in Birmingham, on Saturday. The arbitrator's award was received on Tuesday. It lays down that the reduction shall be 9d. per ton on puddlers and 7½ per cent. on millmen's wages, to take effect from the 14th inst. The wages question shall, it further states, be open for reconsideration at any time upon a month's notice by either side.

The Swan Garden Ironworks, in Wolverhampton, one of the two plants until lately owned by Messrs. G. B. Thorneycroft and Co., have just been bought by Mr. John Lysaght, galvanised sheet-iron manufacturer, of Bristol. It is believed that between 23,000L and 25,000L is the purchase-money. Mr. Richard Dodd (late of the firm of Deakin and Dodd) has been appointed sole manager, and the works will be set on as early as possible.

The engineering firms in the district have mostly commenced work this week on new terms with their men. They had given their operatives notice that they must either work an extra hour or submit to a 10 per cent. drop. The operative ironfounders have resumed at ten hours instead of nine, but the engineers, fitters, pattern makers, and so on, are offering to submit some to a 5 and some to a 7 per cent. drop. The masters, however, are determined that unless they agree to the full 10 per cent. reduction other men shall be set on in their places.

To-day in Birmingham the directors of the Sandwell Park Colliery Company presented to the shareholders their report and balance-sheet for the half-year ending December. There has been a profit for the three months of 457L, which is carried forward. The making of the north road to prove the remainder of the estate has reached 456 yards into the Park, making the total distance from the shaft 1129 yards. During the last full week in December upwards of 4000 tons of coal were raised, but this output is within the capabilities of the machinery. The directors are of opinion that Sandwell possesses all the elements of a great future.

The North Staffordshire Coal and Iron Trades are unaltered. The Mayor of Longton has been trying to induce the miners on strike to come to terms, but at present to no effect. Many of the miners who have been imported by colliery owners to take the place of the discontented have been sent back by the men's Union, which has paid their railway fares and the like. Most of the ironworkers have received notice of the termination of existing contracts, previous to a reduction in wages of a somewhat similar amount to that now in vogue in South Staffordshire.

Mr. Walter E. Wood, of Dennis Park, Stourbridge, has compiled a very useful chart, showing at a glance the fluctuations in the price of South Staffordshire pig-iron for the past thirty-six years—from 1842 to 1877 inclusive. Mr. Wood has taken common melting pigs as the standard regulating the fluctuations of all other descriptions made in this district. From this chart it appears that common pig attained its maximum in September, 1872, when the price was 6L 10s. per ton, and its minimum during the last four months of 1877, when the ruling rate was 2L 5s. This low level has only been reached twice previously in the period embraced by the chart—for three months in 1843, and one month in 1852. The lessons of the chart, which lie on the surface, are not without an element of consolation for our ironmasters.

Notice is given that in the district under the charge of Mr. J. P. Baker, Her Majesty's Inspector of Mines, an examination for Managers' Certificates of Competency, under the Coal Mines Regulation Act, 1872, will be held on Jan. 29, at the Town Hall, Wolverhampton. Candidates intending to present themselves at such examination may obtain particulars on application to Mr. W. Blakemore, F.G.S., the secretary. Persons who do not reside within the district are equally eligible for examination with those who do.

By the kind permission of Mr. E. Fisher Smith, a successful trial of the Telephone has been made on the Earl of Dudley's private wire, between the Priory Offices, Dudley, and the Round Oak Ironworks, under the superintendence of Mr. Walter Spinney, to whom the instruments belong. After establishing the necessary connection, a conversation was carried on for nearly an hour, with complete success, and several songs were sung and distinctly heard at the other

end. At the conclusion, a vote of thanks was transmitted from Round Oak to Dudley, to Mr. Smith, for his kindness in permitting the experiments.

THE USE OF SALT IN PUDDLING IRON.—A short time since Mr. James Barnett, the patentee of certain modes of using salt in puddling iron, addressed a letter to this Journal, in which he claims to have accomplished by his patent mode of distributing salt in the furnace the following important objects—an extra saving of scrap, effecting a reduction of from 2s. to 9s. per ton upon the make; a saving of fuel to the extent of four tenths, and by getting iron out of that used an addition to the yield; an improvement in the quality of the iron; an increase of yield, dependent for amount upon the nature of the pig and the quality of the fuel; a diminution of the puddler's labour while at work, and a shortening of his time of working to the extent of at least ten minutes per heat, or one hour per turn, by reason of the iron when treated by this process, rambling more easily and balling lighter than when worked under the ordinary conditions. The patentee is just now engaged in demonstrating the value of his patent at the works of Messrs. Harrison, Hipkiss, and Harrison, the Pleck, Walsall, and has achieved results satisfactory to both employers and employed. One of the members of the firm, a practical man, who has been actively engaged in the manufacture of iron for many years, describing the process as useful, and likely to be of benefit to the trade; and the puddler and shingler both testifying in its favour on the grounds of its lightening their labour, and producing iron of a superior quality. In the case of one heat worked under somewhat disadvantageous circumstances, in the presence of the representative, ordinary tap was alone used as fettling, and from 5 cwt. 0 qr. 9 lbs. of pig weighed in, 5 cwt. 0 qr. 7 lbs. of iron was weighed back in one hour and thirteen minutes. The weighman's books showed that in two other consecutive heats at the same furnace there was a gain of 1 qr. 2 lbs. upon 10 cwt. of pig weighed in, the fettling being nearly the same as in the case named above, and, as in that instance, no scrap being used. The extra trouble to the workman in carrying out the process consisted merely in saturating the fettling with a saline solution, pouring a bucketful of the same solution in the furnace through the stopper hole, and putting in a certain quantity of salt at a later period. Similar results to those named have been obtained elsewhere, an official return in Mr. Barnett's possession crediting him with a yield in eight shifts of 10 tons 8 cwt. 0 qr. 14 lbs. of puddled iron from 10 tons 5 cwt. 2 qrs. of pig; the consumption of fettling being—of best tap, 13 cwt.; pottery mine, 13 cwt. 2 qrs.; purple ore, 16 cwt.; ground bull-dog, 15 cwt.; no scrap. The invention having more or less fully been brought under the notice of the trade in different ways during the last few months, it will, perhaps, be unnecessary to go further into detail here; but if the process yields all the advantages which the experiments and official returns appear to demonstrate, it would seem to be deserving of the careful attention of ironmasters, as affording a ready means of lessening the cost of production, and affording material relief to the trade.—*Birmingham Daily Post.*

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Jan. 26.—No material change has taken place at the ironworks or collieries in Derbyshire since last notice, so that dullness is still the prevailing feature in most localities. The demand for pig is still but moderate, without any alteration in price. Considerable importations of ironstone, however, still come from Northamptonshire for the furnaces at various places, a good deal being consumed in the Erewash Valley. At the foundries only a moderate business is being done, but some of the boiler-makers are favourably off for work. In Bessemer rails there is still the same activity as has been the rule for some considerable time past. At the collieries in the Chesterfield, Staveley, Clay Cross, Langley Mill, and other districts there is scarcely so much doing as there was a week or two ago; and at one or two places where full time was being worked the men have been put on four or five days a week. At Clay Cross, although about an average tonnage is being forwarded to the Metropolitan, or about 6000 tons a week, yet the miners are not doing much more than four days a week; indeed, such time is about the rule, whilst a good many men are altogether idle. The consequence is that some distress exists at several places, but this is met by the liberality of the gentry and tradespeople resident in the locality where it exists.

The trades of Sheffield have undergone no improvement whatever, and whilst two or three branches are doing very well, the great majority are in a very depressed state. In the localities where the working classes principally reside the distress has been found to be greater than was at first anticipated, for many families have parted with all their furniture and nearly every article of wearing apparel except what covers them, before their condition was made known. The Mayor has acted with great promptitude, and has raised a fund of about 3000L, whilst many persons have visited families and supplied them with necessities. The wants of the people will be met by the liberality of those resident in the town. The only department that can be said to be at all active is the Bessemer, the mills running very well, and turning out large quantities of rails, but there is not much doing in those made of iron. One or two of the cutlery houses are doing a fair business in good qualities of table and other knives, both for the home market and for America, and in secondary qualities for some of our colonies. File makers have been quiet for some time past. In tyres, axles, and other forgings there has been no improvement whatever, and the same may be said with respect to cast-steel goods generally.

REPORT FROM CORNWALL.

Jan. 24.—We must wait a little longer yet for the substantial improvement in the tin standards which has been so anxiously anticipated. The opening of Parliament, however, and the consequent declarations of policy, have got rid of much of the uncertainty which prevailed, and must have their effect by-and-by. Meantime there is certainly already a stronger feeling apparent, and there are very good reasons for holding that ere long business generally will show some little improvement. Still, from all parts of the country do we get the one complaint—"Business is dull," while to this a few add, "and never was duller." Even here, however, an improvement is manifest, and that in some of the spots most distant from the great centres, towards which the returning tide must shortly flow.

Messrs. Taylor are to be congratulated once more upon their success in Mellanear. West Tolgus has been one of the greatest and most persistent successes of recent years; and now to this Mellanear has to be added. It is singular that with so much depression in mines generally, and at a time when tin mines are down to the lowest depth, and copper mining has been said to be extinct, another copper dividend mine should have been opened up. All this strengthens the opinion we have so many times expressed that mining in Cornwall will take a great deal of killing. We are glad that this new success is in such excellent hands, for if ever there was a firm that carried out mining legitimately and that thoroughly deserved success it is that of Messrs. Taylor.

The new executive of West Seton are apparently determined, if words will do it, to justify their actions, which in some respects are rather of a sweeping character. We cannot, on the face of it, believe that the mine has been so mismanaged as some would make it appear. After all, however, it is no good indulging in recriminations. The only real way in which the step recently taken can be justified is by the results as seen in the fortunes of the mine; and if West Seton can again be brought into the Dividend List, not as a mere flash in the pan, which could be readily managed, as the history of many a speculative mine would show, but in a more permanent fashion, why then Mr. Rule will be able to congratulate himself. Till then he is by no means "out of the wood," and should not "halloo."

Some interesting statistics with regard to the present produce of tin in Cornwall have been compiled, and show that, upon the whole, there is little falling off in the yield, some of the large mines making up for the stoppage of some of the smaller by materially increasing their returns. The probable produce of the next six months is thus given:—Botallack, 35 tons; Basset and Grylls, 2; Blue Hills, 4; Carn Brea, 90; Combella, 4; Cook's Kitchen, 17; Dolcoath, 110; Drake Walls, 3; East Pool, 60; East Wheel Lovell, 4; Goolle Pellas, 12; Killfret, 7; Levant, 19; Medlyn Moor, 2; North Wheel Busy, 5; North Levant, 11; Park of Mines, 4; Pedn-an-dren, 23; Penhalls, 17; Penruthal, 4; Phenix, 50; Polrose, 6; Providence, 5; The Lovell, 6; St. Ives Consols, 3; South Condurrow, 51; South Wheel Croft, 12; South Roskear, 5; South Wheel Frances, 24; Tincroft, 62; Treleigh Wood, 14; Trumpet Consols, 4; West Wheel Frances, 26; West Godolphin, 15; West Wheel Basset, 52; West Wheel Seton, 20; West Wheel Eliza, 4; Wheel Agrar, 14; Wheel Basset, 24; Wheel Coates, 4; Wheel Eliza Consols, 40; Wheel Grenville, 14; Wheel Pevor, 36; Wheel Prussia, 12; Wheel Jane, 15; Wheel Kitty, 20; Wheel Owles, 25; Wheel Sisters, 40; Wheel Unity, 32; small mines, 15; and river tin, 80; in all 1168 tons per four-weeks month, or

15-184 tons per annum. The quantity of white tin may be estimated at 9200 tons, subject to a slight variation in consequence of the tin in the assays by which the tin is bought being of a different degree of fineness from the tin as sold in the block or ingot—one of the secrets of the success of tin smelting and smelters.

Some mine managers may need to be reminded of the duty cast upon them by the Mines Regulation Act of making the official returns to the Inspector by Feb. 1. As they are not to have any further notice it may not be without some service to quote the following letter, which Dr. Foster issued with the new year, and which, if they need a reminder, will give it to them. Dr. Foster writes—"I enclose an Abstract of the Metalliferous Mines Regulation Acts and the form for the annual return. The former must be posted up in a conspicuous place on the mine easily accessible to all your work-people, both men, women, and children. I beg you to fill up the latter, and send it back to me not later than Feb. 1. As the Amending Act with regard to the return has now been in force for two years, I think its provisions must be pretty well known, and I consider that it will be unnecessary for me to send another circular at the end of January to those who have not forwarded the return. You will, therefore, for the future receive no reminder from me, and to prevent your forgetting all about the return, I should advise you to fill up the form at once, and send it back to me while the matter is fresh in your memory. I must beg you to recollect that you are liable to a penalty of 20L if the return is not sent in by February 1, and it will become my duty to institute prosecutions unless this point is strictly attended to."

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Jan. 24.—There has again been no improvement in the Iron Trade, and matters appear as gloomy, if not more so, than ever. During the past few days another iron rail mill has been stopped at the Rhyney Works, and about one-half of the iron manufacturing department is now entirely stopped. Buyers seem to be holding off for some reason, and it is suggested that they desire a further reduction in quotations, which are now low enough, as everybody knows. Few orders for rails have been given out recently, and those that have been secured are of an insignificant nature, comparatively speaking. The bar trade is also dull, little bar-iron being made except for local purposes. Clearances of iron during the week have been mainly to India, Brazil, and Germany. The Steel Trade is moderately active, but briskness at the works is not observable. The Tin-Plate Trade appears to be still improving, although no material change has occurred in prices, even for the best brands. Unquestionably this industry is the most active now. A hopeful sign is that the Upper Forest Tin-Plate Works, Morriston, Swansea, will shortly be reopened. They have been closed about two years, and were last the property of Mr. E. Bagot. They have been purchased by Mr. William Williams, managing partner of the Worcester Tin-Plate Works, also at Morriston. As might naturally be expected, the inhabitants of the locality are rejoiced over this fact, and Mr. Williams has been congratulated by many on this event. The works will, it is stated, be at once put in a state of repair, and it is expected will be reopened some time in March. There is also a rumour that if certain legal difficulties can be arranged the Pont-y-mister Works may also be re-started.

The Ebbw Vale Steel, Iron, and Coal Company (Limited) have petitioned the Master of the Rolls for an order to reduce its capital by some 670,000L, and the prayer was granted. The company's capital was 2,383,000L, and there was (so stated the counsel) a lost capital to the amount of 270,275L. The object is to increase the dividend.

Another company in the district has come to grief, it is said, through the action of one of the largest debenture-holders. The Llynvi, Tondy, and Ogmore Company has been obliged to liquidate, and this course has been taken on behalf of the interests of the shareholders. The petition is stated to be a "friendly" one, a term well understood in legal phraseology. Mr. Smith, the secretary of the company, has been appointed liquidator.

The Coal Trade continues not over brisk, and shipments during the past week have shown a slight falling off. The demand for steam qualities is only moderately good, and in house coals little activity is experienced. A delegate meeting of house colliers has taken place at Porth, in the Rhondda Valley, and the men protested against certain reductions made on items of work beyond the 5 per cent. decrease in wages. The workmen will endeavour to negotiate with the employers. Prices for all descriptions of coal continue at the same low ebb. Patent fuel is dull, but shipments are a little more active.

In the Exchequer Division it has been intimated that a settlement has been arrived at in the case of the Aberdare Rhondda Steam Coal Company v. Richards and Co. The action was brought for the non-acceptance of coals under a contract. The point raised was whether a lock-out was the same as a strike. A verdict for 275L was consented to by the defendants. The arbitrator found that a lock-out was the same as a strike.

The death of Mr. Joseph Needham, long connected with the Beaufort Works, Monmouthshire, is announced. He was agent and manager from 1820 to 1871 to the works, now closed under different proprietors. He is universally regretted by all who knew him, and they were many; and died at the ripe old age of 79.

TRADE OF THE TYNE AND WEAR.

Jan. 24.—It cannot be said that there is any improvement in any branch of trade here, the shipments of house and gas coal continue on a good scale, so far as the quantity is concerned, but the demand for manufacturing coal and for coking coal is so bad that prices are ruinously low, and a reduction of wages in Durham below the minimum fixed is still discussed. There is no prospect as yet of any recovery from the depression which was so severely felt during the whole of last year, partly caused by the unnatural inflation of prices four years ago, the existence of war in the East, and the uncertainty whether other countries may be drawn into it.

It appears from statistics published that whereas the total export of coal from the United Kingdom has gone on increasing, the export from the Tyne has decreased, and it is further worthy of the most careful consideration that the comparative shipments from Tyne Dock and from Northumberland Dock show that the decrease is entirely due to the falling off of the Northumberland steam coal trade, a state of affairs which calls for the urgent attention of all concerned with the object of recovering the lost trade if possible. It is evident that the house and gas coal trade is in a healthy state so far as they compete with other districts, and a fair share of the trade of this and other countries is got, but the steam coal trade is at fault, the cost of raising is evidently too great, and, therefore, the steam coals of other districts in this country and of Westphalia are cutting them out. It is worthy of notice that great efforts have been made during the past year to extend the trade in German coal, and it has been attended with some success, as is shown by the imports of coal into the great port of Hamburg:—Import of English coals, 900,000 tons in 1876; 800,000 tons in 1877; Imports of German coal, 141,240 tons in 1876; 241,781 tons in 1877. It is evident that the men ought to accept the proposed reduction at once, and not spend time in voting on sliding scales and other crotchets whilst ruin and absolute starvation is in their midst. It cannot be expected that the men generally will understand these commercial questions, but their leaders, some of whom are Members of Parliament, no doubt do, and it is their duty to enlighten them on the subject. The men evidently cling to the notion that the question of wages is one merely between them and the colliery proprietors, which of course is a great mistake, as the consumer must be taken into account as the most important factor in the question. It is expected that the dispute at the Northumberland collieries is now likely to be settled, as a joint committee of masters and miners has been formed, and this committee is invested with power to settle the question on a fair basis, and also, if possible, to average a sliding scale for the guidance of the trade in future.

COAL CUTTING BY MACHINERY.—Although many trials have been

pe, or, otherwise, obtain information of a claim which would mining company.

COAL MINES REGULATION ACT, 1872.

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NOTICE IS HEREBY GIVEN, that an EXAMINATION for MANAGERS' CERTIFICATES OF COMPETENCY, under the above-named Act, will be HELD on the 29th day of January, at the Town Hall, Wolverhampton. CANDIDATES INTENDING TO PRESENT THEMSELVES at such Examination may obtain particulars on application to the Secretary of the Board of the above-mentioned District.

By order of the Board,

W. BLAKEMORE, F.G.S.,
Heathfield Villa, Wolverhampton,
Secretary.

N.B.—Persons who do not reside within the District are equally eligible for examination with those who do.

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LECTURE II.—February 4th: After Damp or Choke Damp. Appliances for Lighting Mines; the Safety Lamp, &c.
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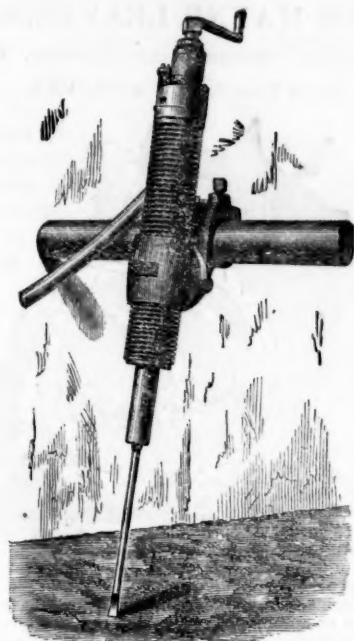
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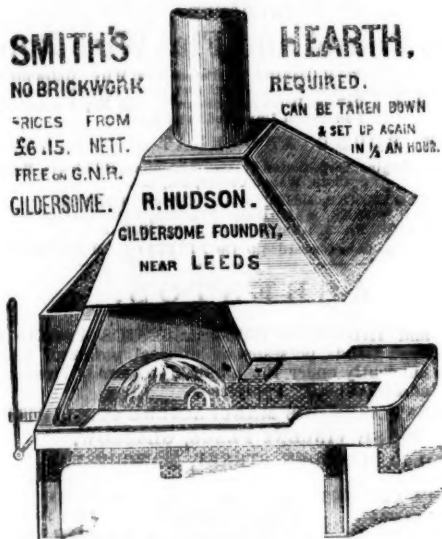
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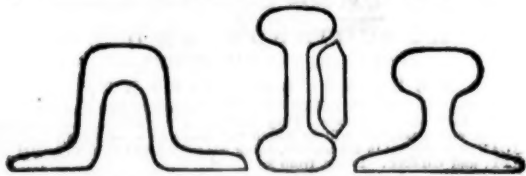
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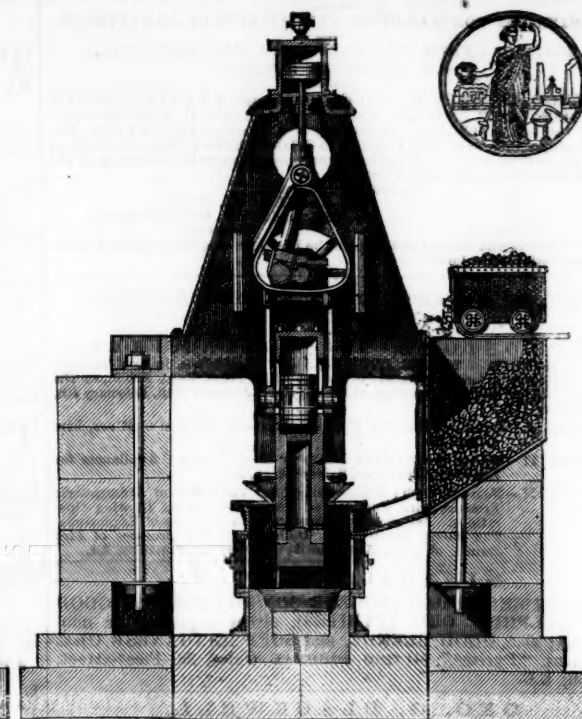
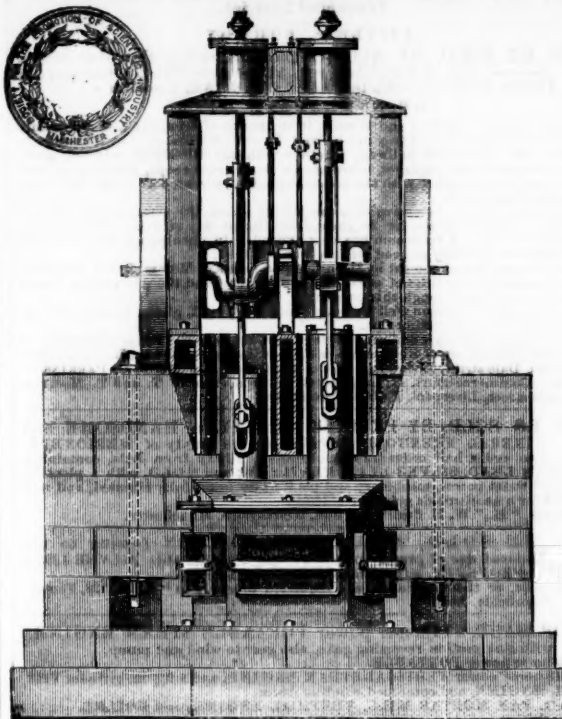
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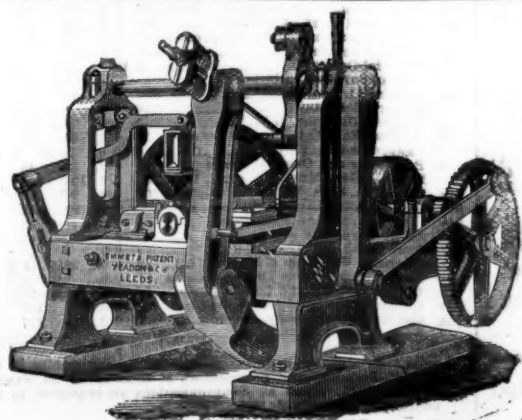
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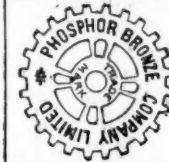
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